TECHNOLOGY DEPT.

AUGUST, 1950

Flow

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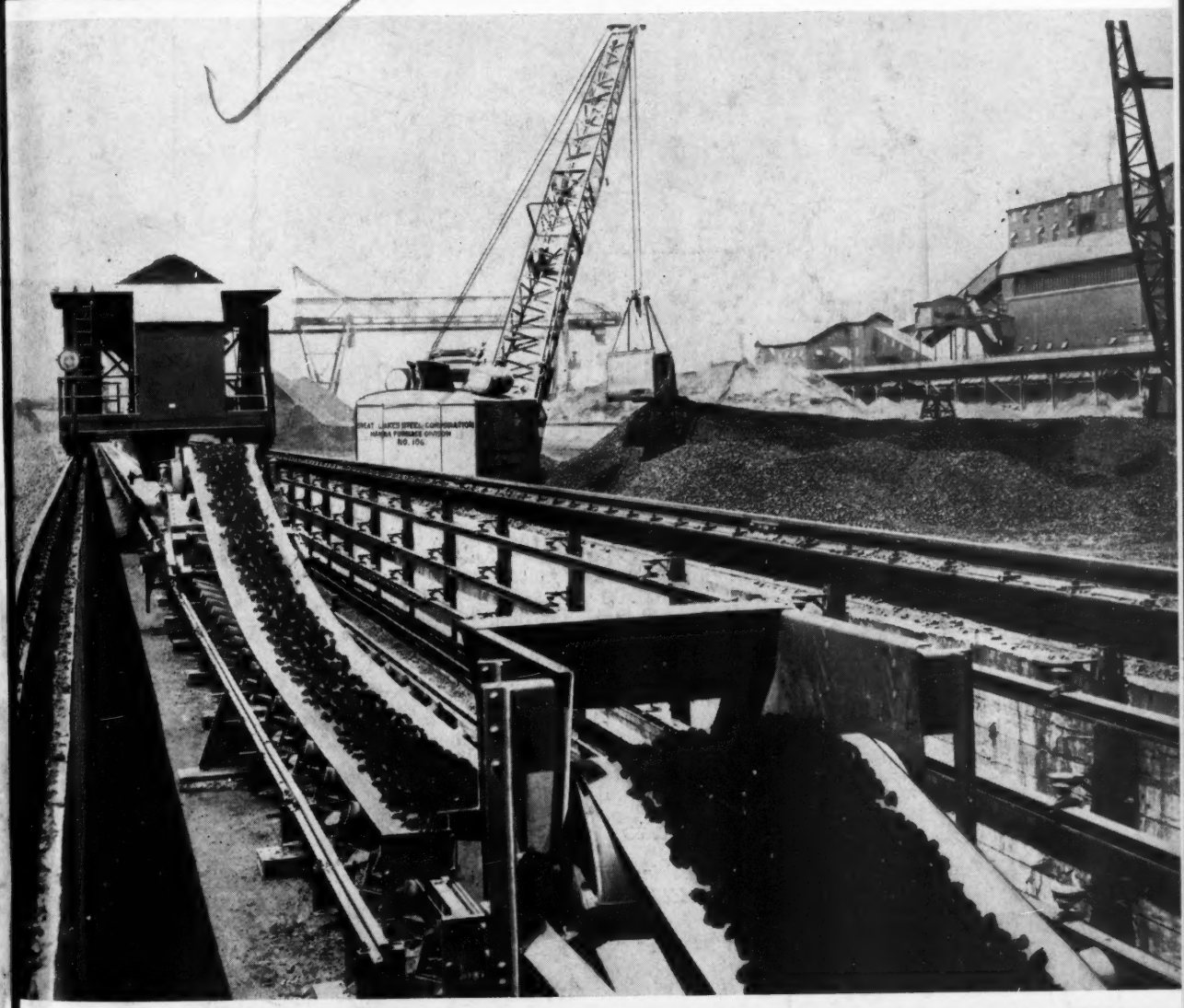
DETROIT

OF MATERIALS THROUGH PROPER HANDLING AND PACKAGING METHODS



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Crane Skip Handling
The Coming Exposition
Canvas Belting III
Building Without Walls
Innovation For Newsprint
Sideways Through Assembly

SEABROOK FARMS PHOTO BY TAUBERT

Thanks to Thermoid Belting . . . Nimble Fingers Prepare Vegetables *Faster* for Quick-Freeze

The picture above is a picture of profit . . . *in produce handling.* Long life, continuous-flow Thermoid Belting keeps the line moving . . . during busy seasons when shut-downs can knock-down profits.

Thermoid Belting has met the test of reliable, full-shift service in many food packaging plants as well as thousands of factories and warehouses throughout the country. Continuing Thermoid research and product development have kept pace with increasingly stiff materials handling requirements. Thermoid distributors and field representatives—working day-by-day with materials handling problems similar to yours—know how to select the right belt for your application.

Don't let a belting problem slow down your line . . . don't let a belt that wears out prematurely wear down your profits. Call your Thermoid distributor. Together with the Thermoid field representative, he can help you get greater economy, longer service life and greater production for your belting dollar.

It will pay you to *Specify* Thermoid

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.

Thermoid Company

Main Offices and Factory • Trenton, N. J., U. S. A.
Western Offices and Factory • Nephi, Utah, U. S. A.
Industrial Rubber Products • Friction Materials • Oil Field Products

Circle No. 1 on Reader Service Card for more information

If you answer "NO" to more than 4 of these questions.....

HIDDEN HANDLING COSTS are eating into your profits!

	CHECK YES	CHECK NO
1. Do you know how many of your workers are engaged in *manual* lifting, moving and stacking of materials?	☐	☐
2. Have you eliminated skilled workers from wasting time hand-moving materials in production?	☐	☐
3. Do you know *exactly*, or even *approximately*, what percentage of your product *cost* represents *material handling* cost?	☐	☐
4. Can just *one* man lift and move tons and tons of material with *easy, finger-tip-control* of electric push button, as is the case with Automatic Electric Transporters?	☐	☐
5. In storage areas, are you using empty but *usable* space *overhead*, stacking your products *ceiling high*, as can be done by *one* man operating a Transtacker or Automatic Skylift Electric Truck?	☐	☐
6. Do you know how many tons of material you move *into, through* and *out* of your plant daily?	☐	☐
7. Have you done anything to relieve labor and skilled workers, fatigue and loss of time caused by back-breaking *hand-lifting*, bending and *hand-truck-moving* of material through your plant?	☐	☐
8. Do you know how much *hand-handling* of materials is costing you in (1) material and product *damage*, (2) needless *accidents*, (3) tired, *low morale* workers, and (4) production inefficiency?	☐	☐
The Score Tells if Your Costs are Too High!	☐	☐

Apply the Remedy of AUTOMATIC ELECTRIC TRUCKS...

Get 50% to 75% Material Handling Savings!

What's *your* score on the important material handling questions listed above?

Business men admit that these questions, for the first time, really opened their eyes to the "hidden costs" in material handling, and how they added excessively to the costs of their product... as much as 36% to every production dollar spent.

When you answer these questions, how many can you answer "yes" to... how many "no"?

If you answer "no" to more than 4 of these questions, there is a strong likelihood Automatic Electric Trucks can eliminate many material handling "hidden costs," and cut your overall handling costs a money-saving 50% to 75%.

Let us tell you more about them... how they lift, move and stack tons of material with easy finger-tip control... how *one* man does the work of three, releasing two men for more productive work... and what these service-tested electric trucks have done in saving industry millions of dollars.

Mail the coupon for a truly revealing booklet, *"How To Make Your Material Handling Pay Dividends."* When you get it, you will see how you can answer "yes" to all the questions shown above... and earn your business a better profit through material handling savings. Mail the coupon.

SEND COUPON FOR FREE BOOKLET!

Send now for this booklet *"How to Make Your Material Handling Pay Dividends."*

Trade **Automatic** Mark
ELECTRIC TRUCKS
Lighten LIFE'S LOADS

Trade **Automatic** Mark
141 West 87th Street
Dept. M-5, Chicago 20, Ill.

Please send me free, your booklet "How to Make Your Material Handling Pay Dividends."

Company Name.....

By.....*Position*.....

Street Address.....

City.....*Zone*.....*State*.....

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Flow

FLOW is not the official publication of any group, society or other special interest and consequently its editorial pages are unbiased and undominated.

IRVING B. HEXTER, Pres.
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Address communications to
FLOW MAGAZINE
1240 Ontario Street
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MANFRED SCHUELER
Editor

HENRY F. EATON
Associate Editor

•

FLOW EDITORIAL AND BUSINESS OFFICES—

CLEVELAND OFFICE
HAROLD F. BEHM
1240 Ontario Street
Cleveland 13, Ohio
Phone: Tower 1-0264

NEW YORK OFFICE
LEE HAAS
60 E. 42nd St.
New York 17, New York
Murray Hill 7-3420

CHICAGO OFFICE
ROBERT E. McKENNA
Room 734
520 N. Michigan Ave.
Chicago 11, Illinois
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FRED FRISENFELDT
Industrial Publishing Co.
Room 403
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COMMERCIAL REFRIGERATION AND AIR CONDITIONING

COVER PHOTO—This is one of three crawler-mounted cranes which transfer coal from stockpiles via traveling hoppers to heavy-duty belts at the Blast Furnace Division, Great Lakes Steel Corp., Detroit. The cranes are equipped with three-ton buckets and 60-ft. booms, and each has a capacity of 500 tons per hour.

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"Acceptance under section 34.64, P. L. and R. authorized at Milwaukee, Wisconsin."

THE WALKIE TYPE PALLET TRUCK WITH MANY EXCLUSIVE ADVANTAGES

The SHORTEST MOTORIZED, BATTERY OPERATED Walkie PALLET TRUCK built!

For PROOF Compare!

SHORTEST OVERALL LENGTH

The power unit of the Shortie Model Moto-Truc is only 23¾" long, including motor drive unit and battery, regardless of the length of fork. This is 5" to 20" shorter than any other truck of this type.
The Standard Model Moto-Truc is from 2" to 18" shorter than any other truck of this type with the exception of the Shortie, regardless of fork lengh.

EASIEST AND MOST CONVENIENT CONTROL

All the controls of the Moto-Truc are mounted in easy grip roller type handle, within finger tip reach of the operator. Two speeds forward and two speeds reverse, with dead man control. Lifting and lowering push buttons in the ends of handle.

EASIEST ACCESSIBILITY TO WORKING PARTS

By removing four bolts, all parts of the motor are exposed. Removing four nuts on the cover exposes control switch. Brake adjustment is accessible without removing covers.

POWERFUL AND RUGGED TYPE MOTORS

12-volt for ordinary operation and 18-volt for heavy duty or ramp operation. Chain and gear drive for flexibility and removal of strain on all operating parts.

SAFETY IN OPERATION

Moto-Trucs are the only trucks of this type using an internal expansion type of brake mounted on the drive wheel and which is controlled directly from the steering handle. This insures safety and keeps the truck under the operator's control at all times. If any parts break between the motor and the brake, the operator has absolute control of the truck.

Write for Bulletin No. 50, and Specifications.

PALLET TRUCKS
PLATFORM TRUCKS
HI-LIFT TRUCKS

The MOTO-TRUC Co.
1953 E. 59th Street
CLEVELAND 3, OHIO.
•ORIGINATORS of MOTORIZED, BATTERY OPERATED WALKIE TYPE TRUCKS

MOTO-TRUCS HAVE LESS MOVING PARTS AND EASIER ACCESSIBILITY —a time saver in inspecting and servicing.

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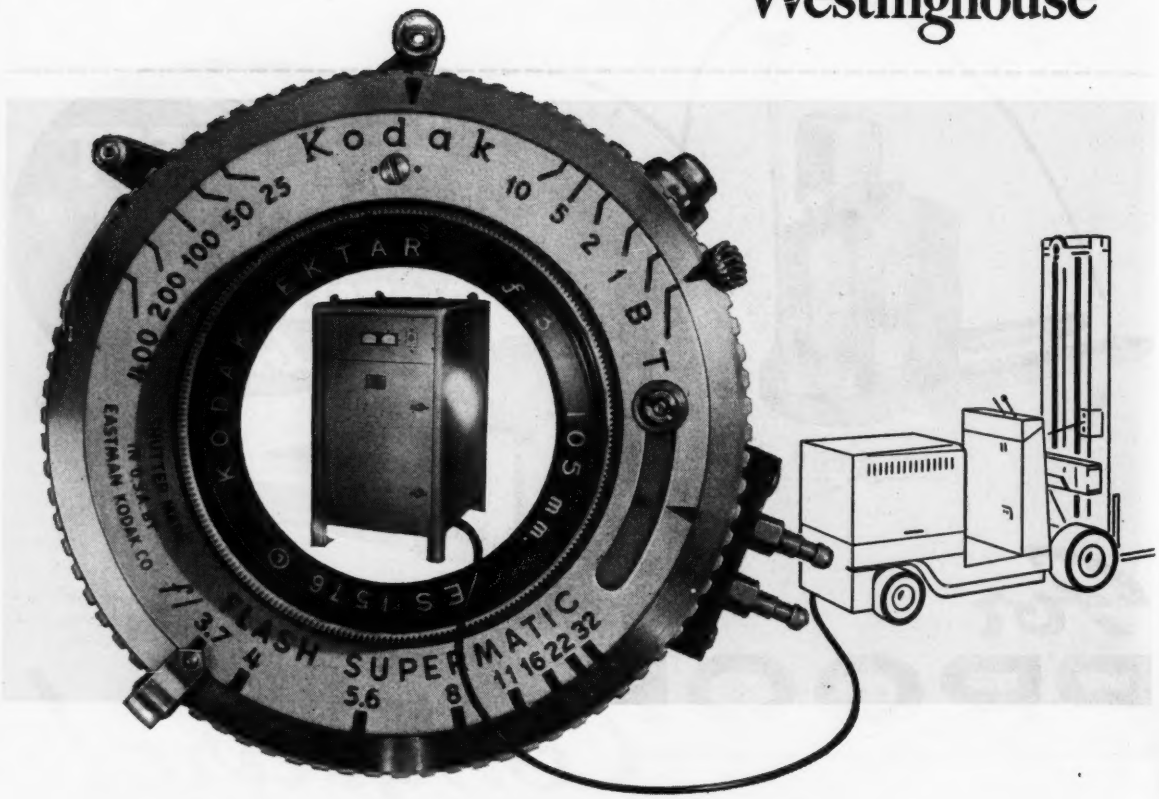
YOU CAN BE **SURE**.. IF IT'S
Westinghouse



SIMPLE DIAL OPERATION
Clicks with Kodak (TRADE-MARK)

Just plug it in, set the dials—it does the rest. Simple dials provide both high and low rate adjustment. No taps to change. Charging cycle is completely automatic.

Further, Rectox saves power. Reactors eliminate energy-wasting resistors, provide stable output over years. An exclusive manufacturing process assures uniform, constant performance of the cells; lowest rate of forward aging.

That's why Kodak, and other large users of industrial trucks, choose Westinghouse Rectox Industrial Truck Battery Chargers.

Check your Westinghouse representative for complete details. Ask him for a copy of DB-19-040, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna.

J-21589

Westinghouse
Rectox
Rectifiers & Chargers for
ALL INDUSTRIES

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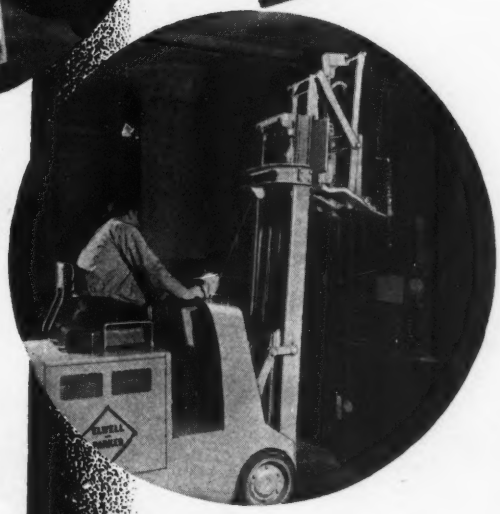
SIMPLE AS...

A Drum, clamped in device, being removed from boxcar.

B Operator elevates drum and tiers it in storage.

C Drums being removed from tier and carried to next operation.



...with the NEW

ELWELL-PARKER

Drum Handler

You can transport and stack filled drums *faster* with this latest attachment for E-P fork trucks. By tiering drums *without* pallets, it will *save your space.* Also, this handler is ideal as a *pallet loader*—to assemble drums in multiples upon pallets which are then carried by other fork trucks or on trailers for tractor delivery.

This E-P device has been specially designed to contribute to the handling of the **24 MILLION** drums produced annually as well as those already in service.

At the top of the drum handler's frame is an adjustable hook; at the bottom are two footplates beveled and grooved to conform to the drum's contour. First, the hook engages the top chime. Next, the drum is tilted backward, elevating all of the lower chime except point touching the floor. The footplates then move beneath the lower chime which slips into its grooves. This sychronized gripping and supporting action is simple and secure. The Elwell-Parker Electric Company, 4236 St. Clair Avenue, Cleveland 3, Ohio.

Send for Data
on this New
Drum Handler

ELWELL-PARKER
POWER INDUSTRIAL TRUCKS
Established 1893

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LORAINS
Give you these Features

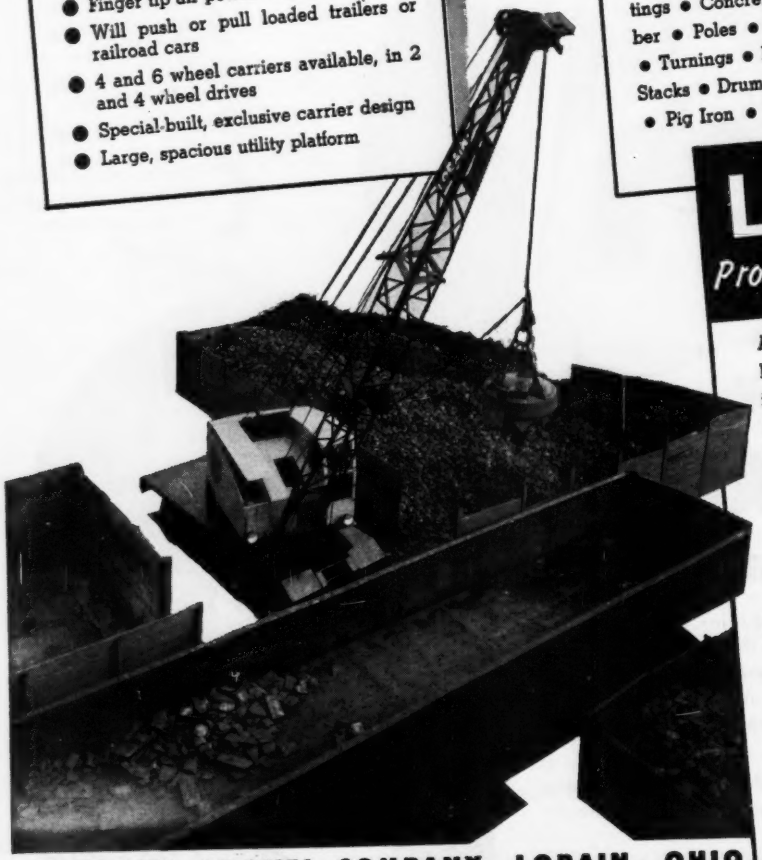
Lorain Self-Propelled Cranes give you more exclusive features for money-saving performance on industrial material handling jobs! Check them!

- One-man operation of turntable and propelling controls
- One engine economically propels machine and powers all crane operations
- All controls for everything at operator's finger tips
- 4 speeds in both directions . . . 1 to 7 miles per hour
- Finger tip air power steering
- Will push or pull loaded trailers or railroad cars
- 4 and 6 wheel carriers available, in 2 and 4 wheel drives
- Special-built, exclusive carrier design
- Large, spacious utility platform

LORAINS
Handle these Materials

There are 15 or more attachments — such as hook, sling, grapple, electric magnet, clamshell or dragline buckets, tongs, etc. — to handle practically any size, shape or class of material. You can handle all these . . . and more . . .

• Boxes • Cases • Barrels • Kegs • Crates • Sheet Steel • Bar Steel • Rolled Steel Forms • Scrap • Coal • Foundry Sand • Limestone • Pipe • Valves • Cement • Crushed Stone • Ingots • Fittings • Concrete • Railroad Ties • Lumber • Poles • Rails • Ashes • Cinders • Turnings • Punchings • Machinery • Stacks • Drums • Cable Reels • Castings • Pig Iron • Ore



LORAINS
Produce these Advantages!

Add them up . . . fit them to your material handling problems . . . you will see why it will pay you many times to check Lorain Cranes with your nearby Thew-Lorain Distributor today!

- Releases manpower for more productive work
- Reduces material handling costs by as much as 50%—or more
- Constant efficiency — does not vary with the hour or the weather
- Goes anywhere . . . lifts any load — faster than other methods
- Better yard storage — higher stacking — less yard space required
- Puts your stockpile "on wheels" — your crane is not chained to tracks
- Handles "extra" jobs — on plant construction, maintenance, etc.
- Speeds up production — moves materials *when* you want them.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

THEW LORAIN® CRANES FOR INDUSTRY

MORE FOR YOUR MONEY IN A LORAIN

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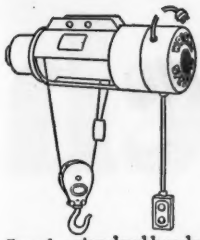
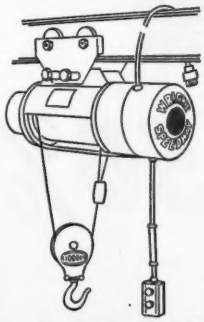
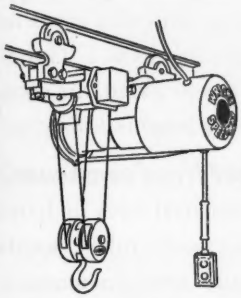


Type L—standard headroom, has grooved cable drum long enough for 37 foot lift without overlapping. Rigid or bolt mounting.



Type L—standard headroom —37 foot lift without overlapping. Trolley mounted.



Type H—for close headroom, with plain trolley, cross-mounted.

WRIGHT AGAIN MAKES *News*

No. 1 (500 to 2000 lbs. capacities) now available with 37 ft. Lift or Low Headroom Mounting.

- Wherever there's a job for a good electric hoist with capacity from 500 pounds to 10 tons, there's now a **SPEEDWAY** to do the job safely, efficiently, dependably and at very low maintenance cost.
- Let us give you complete specifications of Speedway Electric Hoists. Just write for **Bulletins DH-133** and **DH-65.**

WRIGHT *Speedway* ELECTRIC HOIST

ACCO

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

WRIGHT HOIST DIVISION
AMERICAN CHAIN & CABLE

HOISTS
TROLLEYS
CRANES

TRADE MARK

In Business for Your Safety

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B.F.Goodrich

TIRE AND WHEEL

TW ANALYSIS PLAN

CUTS *tire & wheel costs as much as* 50%

Studies prove savings can be made in 2 out of 3 cases.
Proper tire maintenance alone can cut costs up to 20%.

Here's how you can save up to half of your materials handling and industrial handling tire and wheel costs. The TW Analysis determines: correct type and size of tire, correct tread design, correct tread rubber compounds *and applies all correct factors to the specific job.*

Here's how it works—A man trained in materials handling problems will survey your operation, study loads, hauls, handling equipment, floors and hauling surfaces, also any special problems you may have. On completion of this survey the BFG man, without charge or obligation on your part, will recommend the best type and size tires and wheels for your particular service, including suggestions on tire care and maintenance.

Here's why BFG can be impartial—No other company offers the wide range of types or sizes of tires and tread compounds as B. F. Goodrich. Your BFG man has no axe to grind, his company "makes 'em all" . . . his advice is impartial!

14 types of tires–6 different tread compounds—BFG's complete line of industrial tires includes pneumatics, puncture-sealing inner tubes, solids (all types) and Zero-Pressure semi-pneumatics. There's a wide choice of tread designs and a choice between 6 different tread rubber compounds including the famous oil-proof compound.

Mail the coupon for full details at no obligation. A SIMILAR PROGRAM IS NOW READY FOR MANUFACTURERS OF INDUSTRIAL HAULING EQUIPMENT

The B. F. Goodrich Co.
Department TW-42
Akron, Ohio

Please give me additional information on your Tire and Wheel Analysis plan.

Name_____
Title_____
Company_____
City_____ State_____

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TODAY'S BEST BUY—

The **NEW**
CLARK
Electric
TRUCLOADER
1000-lb. Fork Truck

Here are the Reasons Why:

This machine embodies every desirable feature that experienced users have requested. It is the nearest approach yet to the ideal electric 1000-lb. fork-lift truck.

★ **Automatic Acceleration** -Automatically accelerated control is standard. First power point selected by directional control lever on steering column—successive points controlled through master switch, which in turn is controlled by an automatic timer. Guarantees even acceleration.

★ **Non-Plugging Controls** -Impossible to change direction until motor comes to full stop. Important safeguard to windings and other vital components.

★ **"Deadman" Safety Brake** -Brake sets automatically when the driver leaves seat; releases when seat is occupied. Combination parking brake and safety feature. Independent of service brake. Directional control lever also automatically *locks in neutral* when driver leaves seat.

★ **Independent Hydraulic System** Separate motor increases lifting and tilting speeds about 80 per cent—gives drive motor big efficiency boost. Directional lift lever: pulled upward, it raises the forks; pushed downward, it lowers them.

★ **Greater Capacity** Increased lift capacity and speed; increased travel speed. Simplified driving—finger-tip control; non-kick-back steering.

★ **Easy To Service** Battery-compartment cover hinged at front for easy access—plug-receptacle conveniently mounted. All grease fittings within easy reach.

You'll want full information on this new "BEST BUY" in the entire field of Materials Handling. Get in touch with your nearby Clark dealer—you'll find him a capable counselor on your handling problems. The coupon is for your convenience—no obligation.

CLARK ELECTRIC AND GAS POWERED **FORK TRUCKS**
AND INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 13, MICH.
Please send: ☐ Elec.-Truckloader Literature ☐ Movie Digest ☐ Material Handling News

Name_____
Firm Name_____
Street_____
City_____ Zone____ State_____

AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

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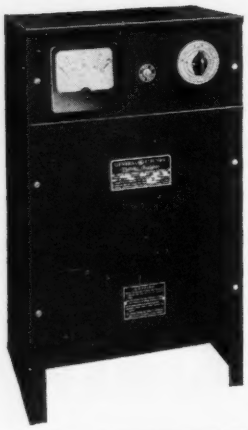


6-cell lead-acid or 10-cell nickel-alkaline

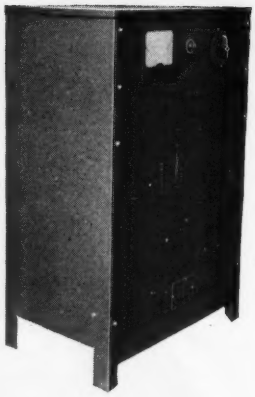
45-amp charging rate

Model No. 6RC951A2

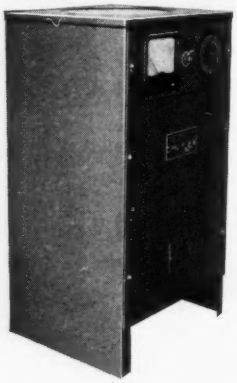
6-cell lead-acid or 10-cell nickel-alkaline

75-amp charging rate

Model No. 6RC161F1



All these chargers operate from either 115 or 230 volts, 60 cycles, single phase. They have an efficiency of about 70 per cent.



10-cell nickel-alkaline only

60-amp charging rate

Model No. 6RC160FE5

6-cell lead-acid or 10-cell nickel-alkaline

90-amp charging rate

Model No. 6RC149F1

BATTERY CHARGERS for Driver-lead type trucks

Metallic rectifier type chargers—Nothing to wear out. Only moving part is a small fan (model 6RS951A2 does not have a fan). No tubes. No brushes. Rectifier stacks have virtually unlimited life. Blowing out dust approximately once a year is the only maintenance they normally require.

Easy to Use—Batteries can be charged right in the truck. Easy to connect. Just plug in the cable—the charger does the rest automatically.

Your truck agent—can give you information on these General Electric battery chargers. Or write Section 463-3 for particulars. *Apparatus Dept., General Electric Company, Schenectady 5, N.Y.*

GENERAL ELECTRIC

463-3

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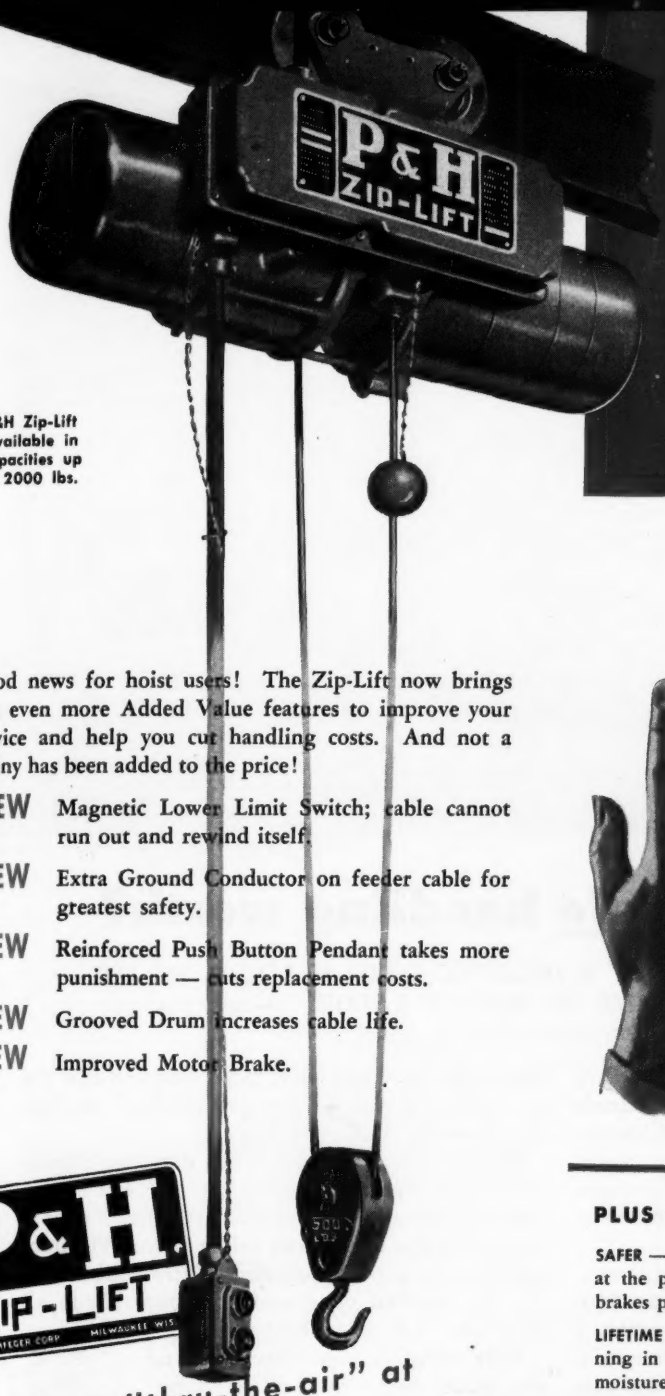
Now-more value than ever...

WITH 5 NEW FEATURES TO HELP CUT YOUR COSTS



P&H Zip-Lift Available in Capacities up to 2000 lbs.

Good news for hoist users! The Zip-Lift now brings you even more Added Value features to improve your service and help you cut handling costs. And not a penny has been added to the price!

- **NEW** Magnetic Lower Limit Switch; cable cannot run out and rewind itself.
- **NEW** Extra Ground Conductor on feeder cable for greatest safety.
- **NEW** Reinforced Push Button Pendant takes more punishment — cuts replacement costs.
- **NEW** Grooved Drum increases cable life.
- **NEW** Improved Motor Brake.

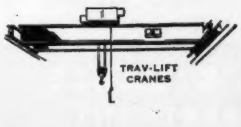
P&H ZIP-LIFT HARNISCHFEGER CORP. MILWAUKEE WIS.

handle it "thru-the-air" at lower cost

See how dozens of handling problems have been solved by the Zip-Lift. This picture-filled book of ideas tells the story. Write for your copy of Bulletin H-20.

HEVI-LIFT HOISTS

ZIP-LIFT HOISTS


TRAV-LIFT CRANES

HEAVY DUTY CRANE

PLUS THESE ADDED VALUES:

SAFER — Full magnetic control with current reduced to 110 volts at the push-button. Crane type limit switch and large double brakes provide maximum safety. No open wiring.

LIFETIME CONSTRUCTION — Precision built — shaved gears running in oil—grease-sealed antifriction bearings—fully enclosed, moisture-proof, dust-proof, acid-proof.

SMOOTHER OPERATION — Motor specifically built for hoist service — to withstand frequent reversal. Loads controlled within a fraction of an inch.

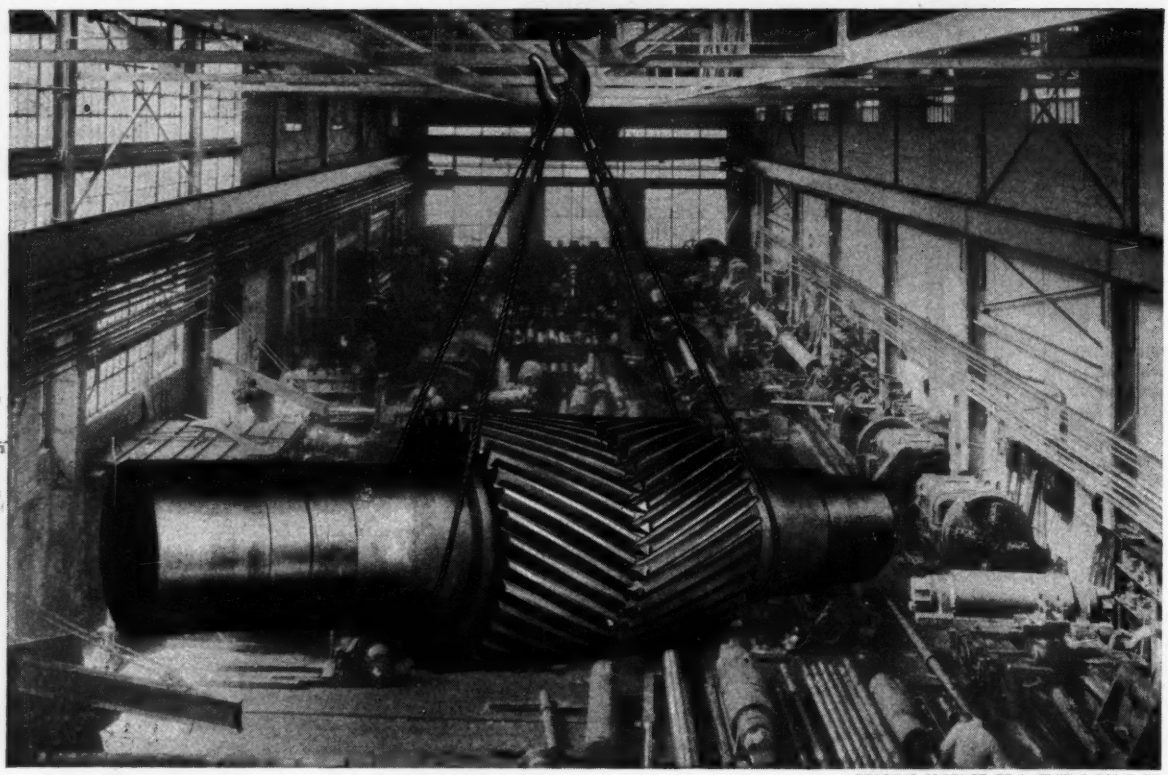
ALERT SERVICE — Immediate stock delivery from qualified dealers everywhere — backed by 18 branch offices and 8 warehouses.

The Zip-Lift is America's biggest selling wire rope hoist.

P&H ELECTRIC HOISTS
4643 West National Avenue
Milwaukee 14, Wisconsin

HARNISCHFEGER CORPORATION

EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • CRAWLER AND TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES



FORGING PRODUCT OF A. FINKL & SONS CO.

How much is safe handling worth?

Apply this formula: ***THE SUM OF A DROPPED LOAD IS EQUAL TO ITS OWN VALUE AND THE VALUE OF WHAT'S BELOW IT****—and you can estimate the worth of safe handling of any load . . .*

● Here for example we have 15,000 pounds of finished machined forging representing hundreds of man and machine hours, costly material, design and engineering time. Added up it's a big investment. If it fell it could harm itself beyond repair and damage or destroy production machinery. Literally, put a big *DENT* in profits.

Worse still—it could seriously injure workmen. For these reasons good, safe slings—**ACCO REGISTERED WIRE ROPE SLINGS**—are tools worthy of top consideration of both safety and production men.

ACCO Registered Wire Rope Slings provide positive safety factors of 5 to 1. They are factory-made, proof-tested with a load double the rated capacity, then registered. This written and signed Register certifies that only Preformed Improved Plow Steel wires were used and that the ACCO-LOC Splices will develop 100% of the catalog strength of the wire rope.

Because the ACCO-LOC Splice does not disturb wire rope structure, stresses on all parts of the rope are equal. Only the ACCO-LOC has 2 collars on each splice as an extra safety factor. Flexible, easy-to-handle ACCO Registered Wire Rope Slings can be snubbed close and are adaptable to all sling uses, with or without fittings.

Write today *for your free copy of the ACCO Registered Wire Rope Slings "SAFE CAPACITIES" card, which includes a guide for discarding work-worn wire rope slings.*

MEMBER THE NATIONAL SAFETY COUNCIL

GREEN CROSS FOR SAFETY

ACCO

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

AMERICAN CHAIN & CABLE

WIRE ROPE SLING DEPARTMENT

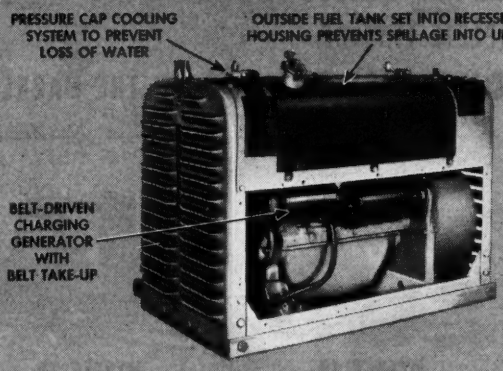
ACCO Registered WIRE ROPE SLINGS

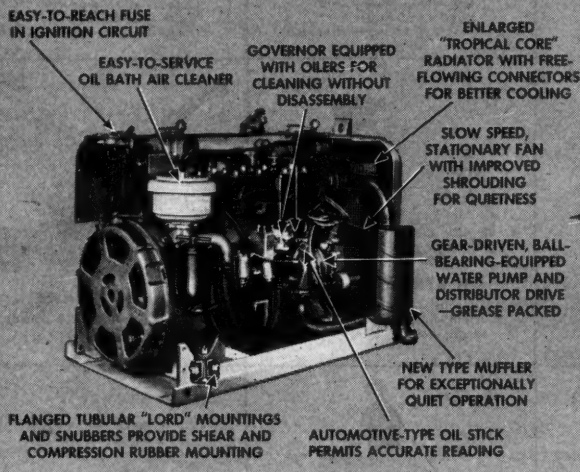
TRADE MARK

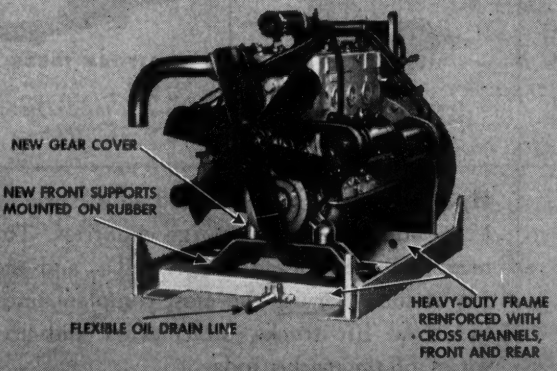
In Business for Your Safety

Circle No. 12 on Reader Service Card for more information

MORE THAN 16 IMPORTANT NEW CHANGES!


PRESSURE CAP COOLING SYSTEM TO PREVENT LOSS OF WATER
OUTSIDE FUEL TANK SET INTO RECESSED HOUSING PREVENTS SPILLAGE INTO UNIT
BELT-DRIVEN CHARGING GENERATOR WITH BELT TAKE-UP


EASY-TO-REACH FUSE IN IGNITION CIRCUIT
EASY-TO-SERVICE OIL BATH AIR CLEANER
GOVERNOR EQUIPPED WITH OILERS FOR CLEANING WITHOUT DISASSEMBLY
ENLARGED "TROPICAL CORE" RADIATOR WITH FREE-FLOWING CONNECTORS FOR BETTER COOLING
SLOW SPEED, STATIONARY FAN WITH IMPROVED SHROUDING FOR QUIETNESS
GEAR-DRIVEN, BALL-BEARING-EQUIPPED WATER PUMP AND DISTRIBUTOR DRIVE —GREASE PACKED
NEW TYPE MUFFLER FOR EXCEPTIONALLY QUIET OPERATION
FLANGED TUBULAR "LORD" MOUNTINGS AND SNUBBERS PROVIDE SHEAR AND COMPRESSION RUBBER MOUNTING
AUTOMOTIVE-TYPE OIL STICK PERMITS ACCURATE READING


NEW GEAR COVER
NEW FRONT SUPPORTS MOUNTED ON RUBBER
FLEXIBLE OIL DRAIN LINE
HEAVY-DUTY FRAME REINFORCED WITH CROSS CHANNELS, FRONT AND REAR

Announcing

The NEW READY-POWER

GENERAL PURPOSE

MODEL H-A

GAS ELECTRIC POWER UNIT FOR ELECTRIC INDUSTRIAL TRUCK OPERATION

"Making a good unit better" was the theme in the development of the finest, most modern Ready-Power Unit ever presented. Refinement features pointed towards important new advantages: remarkably quiet operation; less maintenance; ease of adjustment and complete accessibility. These add up to even longer life and lower operating costs than previous Ready-Power models offered. The new Ready-Power Model H-A has been work-tested and proven under the toughest of conditions. It is designed to replace existing Ready-Power Model "H" units and older models commonly used on Electric Trucks of the following capacities: 4,000 lb. Fork, 6,000 lb. Crane and up to 10,000 lb. Platform.

The READY-POWER Co.
3838 Grand River Ave., Detroit, Mich.

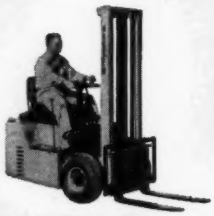
Write for Complete Information

Circle No. 13 on Reader Service Card for more information

HYSTER DEALERS

SELL AND SERVICE THE MOST COMPLETE LINE OF INDUSTRIAL TRUCKS ON THE MARKET

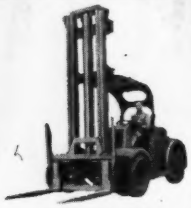
HYSTER
LIFT TRUCKS
STRADDLE TRUCKS
MOBILE CRANE



HYSTER 20
Capacity — 2000 pounds
Width — 37 inches
Length — 71 inches (less forks)

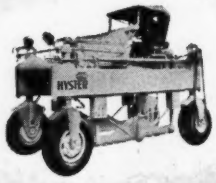
HYSTER 40
Capacity — 4000 pounds
Width — 42 inches
Length — 86 inches (less forks)

HYSTER 75
Capacity — 7500 pounds
Width — 60 inches
Length — 117½ inches (less forks)



HYSTER 150
Capacity — 15,000 pounds
Width — 86 inches
Length — 148 inches (less forks)

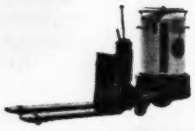
M STRADDLE TRUCK
Capacity — 18,000 pounds
Width — 78½ in. and 90½ in.
Length — 176 inches



MH STRADDLE TRUCK
Capacity — 30,000 pounds
Width — 90 in. and 100 in.
Length — 190½ inches

KARRY KRANE
Capacity — 10,000 pounds
Width — 75 inches
Length — 152 inches

...and now
HYSTER
Salsbury
Turret
Trucks



PALLET TRUCK
Capacity — 4000 pounds
Width — 35 inches
Length — 86 in. and 110 in.
Height — 55 inches

TUG
Towing capacity — 20,000 pounds
Width — 42 inches
Length — 62 inches
Height — 50 inches

PLATFORM TRUCK
Capacity — 4000 pounds
Width — 35 inches
Length — 97 in. and 115 in.
Height — 50 inches

CARGO TRUCK
Capacity — 4000 pounds
Width — 42 inches
Length — 103½ inches
Height — 58 inches

AUTO-LOADER
Width — 20 inches
Length — 135 inches
Height — 50 inches

Hyster dealers are located in 37 principal U. S. cities, and in 57 foreign countries. These men and their organizations sell — and more important — service the most complete line of industrial lift trucks, attachments and accessories, on the market today.

Phone your Hyster dealer for demonstration and list of owners. Or use the coupon for literature.

HYSTER® COMPANY

THREE FACTORIES

2931 N. E. CLACKAMAS, PORTLAND 8, OREGON
1831 NORTH ADAMS ST., PEORIA 1, ILLINOIS
1031 MEYERS STREET... DANVILLE, ILLINOIS

HYSTER COMPANY, 2931 N. E. CLACKAMAS, PORTLAND 8, OREGON

Please mail Hyster catalogs as checked . . . . . ☐ 20 ☐ 40 ☐ 75 ☐ 150 ☐ M ☐ MH ☐ KK ☐ Turret

FIRM NAME_____

MY NAME_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

Circle No. 14 on Reader Service Card for more information

To FLOW:

Focus On Yard Handling

Your June 1950 issue has been read with considerable interest. The article titled "Yard Handling With a Cost Goal" was especially interesting.

In reading the "Over The Editor's Shoulder" column, Mr. G. N. Collins' comments on Pages 12 and 16 were noted. Will you please send one copy of "The Proper Method of Making a Material Handling Survey" that appeared on page 73 of your April issue? Also, please quote prices for additional copies from one through 100.—Claude H. Trotter, Maintenance Equipment & Methods, Refining Dept., Phillips Petroleum Co., Bartlesville, Okla.

"Yard Handling With a Cost Goal" appeared as one of a continuing series of yard handling reports.—Ed.

To FLOW:

Ideas Count

We would appreciate your sending us an additional copy of FLOW Magazine, marked to the attention of the undersigned. We find this magazine extremely helpful and crammed full of ideas and suggestions.—Robert P. Reynolds, Assistant Purchasing Agent, Lowe Paper Co., Ridgefield, N. J.

To FLOW:

Handling For Air Age

I am presently writing a book on materials handling which includes a chapter on handling of air cargo. You had two articles last fall which were outstanding in this field and I would like to reproduce some of the illustrations from them.

The articles are: (1) "Material

For Greater Efficiency—Better Cushion—Longer Service
get Goodyear's
Pressed-on Solids

XTRA CUSHION

Special compounds developed by Goodyear give this Pressed-On Solid Industrial Tire *far greater cushioning* and less rolling resistance than conventional type tires. This *extra* cushioning assures you smoother riding, easier steering, reduced materials breakage, *results in lower maintenance costs all around.*

GROOVED TREAD

Designed especially for slow speed power trucks and trailers, this brute-strength tire does a lion's share of the work on large trucks where extra-heavy loads require a wider tire. Save manpower and time with this superior tire—it provides easier steering, and uniform non-scuffing wear that insures longer service.

YOU'LL find Goodyear makes the most complete line of industrial tires of all types and sizes—every one specially developed to fill a particular type of materials-handling need. So always SPECIFY Goodyear Industrial Tires on your new equipment—BUY your replacements from your local Goodyear dealer.

FREE TECHNICAL ENGINEERING ADVICE AND SERVICE

To help solve your particular industrial tire problems, Goodyear maintains a staff of fully qualified technical experts. For their free recommendations, write: Industrial Tire Division, Goodyear, Akron 16, Ohio.

GOODYEAR
INDUSTRIAL TIRES

Xtra Cushion—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

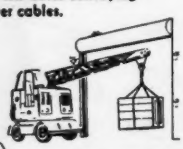
Circle No. 15 on Reader Service Card for more information

COLES

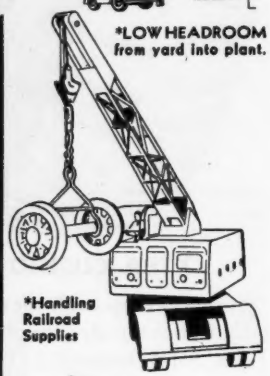
THE NAME
THAT CARRIES WEIGHT
IN MATERIAL HANDLING!

FROM 1¾ TO 23 TON

*15 ton Coles conveying power cables.

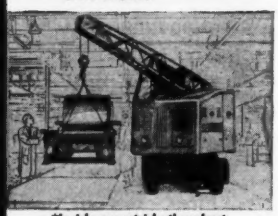


*LOW HEADROOM from yard into plant.



*Handling Railroad Supplies

*Working with magnet close to pile.



*Inside or outside the plant. Assembly.

● PERFORMING a variety of lifting and conveying operations with precision—there's giant-strength and unrivalled maneuverability in every COLES CRANE. 100% concentration on operation is possible as a result of grouped finger-tip controls.

● When you consider ALL AROUND SAFETY, LOW INITIAL INVESTMENT, LOW OPERATION COST, REDUCED MAINTENANCE COST, MINIMUM YARD SPACE... Plus many other advantages—it is no wonder why COLES Mobile Cranes are the first choice among leaders all over the world.

● Auxiliary attachments such as Grab-hooks, Magnet, and Clam Shovel increase the scope of usefulness of every Coles Crane.

Visit our Booth No. 258-9
U. S. International Trade Fair
At Amphitheater
August 7 to 20th, Chicago

COLES CRANES, INC.
4307 South Paulina St.
Chicago 9, Ill.

COLES CRANES

Symbol of the Finest Material Handling Equipment

Circle No. 16 on Reader Service Card for more information

Handling in the Air Age", page 22, October, 1949; (2) same title—November, 1949, page 38.

I would like to obtain glossy prints of the illustrations in both articles and a reprint of the articles themselves if available.

Please state the exact credit line you would like for me to use.—John R. Immer, Assistant Professor of Industrial Management, University of Minnesota, Minneapolis, Minn.

FLOW also cooperated with Professor Immer in connection with his recently published book "Layout Planning Techniques".—Ed.

To FLOW:
Chain Sling Report

May we compliment you on a very good article appearing in your June 1950 issue starting on Page 32, titled "Chain Slings . . . Material Handling Tools".

We as chain manufacturers would like to have 25 or 30 copies of this article.—James C. Hendrickson, General Sales Manager, Campbell Chain Co., York, Pa.

A similar request came from the Chain Institute, Inc., Chicago, which cooperated in the preparation of this survey article.—Ed.

To FLOW:
The Directory

We understand you publish a "Flow Directory". Will you please send us a circular or information concerning the types of data included in this Directory, how often it is published, and its cost.—Gertrude Bishop, Industry Service Representative, Michigan Department of Economic Development, Lansing, Mich.

The FLOW DIRECTORY OF MATERIAL HANDLING EQUIPMENT, MACHINERY AND ACCESSORIES is a combination reference manual for the engineer and a guide for the purchasing agent and production executive. It consists of eight sections, 483 pages. The equipment reference guide features hundreds of drawings of material handling

(Turn to page 19)

Seven Significant Savings

with a Buschman

ROLLER CONVEYOR SYSTEM

• "Exceptionally Well Pleased" says Ft. Wayne Corrugated Paper Company. Production is rolling along BUSCHMAN Conveyors in this noted corrugated board manufacturer's plant. Even over a short period of operation "significant savings" have been recorded:

1. **Previous cost of handling reduced to a fraction.**
2. **Corrugated paper stock waste now at a minimum.**
3. **Stock now more easily and conveniently handled.**
4. **Temporary storage vastly simplified; stock grades quickly identified.**
5. **Palletized loads can not go astray.**
6. **All stock readily accessible; strict sequence of job handling now possible.**
7. **Excessive maintenance for trucks and skids now eliminated.**

This installation is just one example of widely-varied BUSCHMAN experience in practically every industry. Write for additional information. Representatives in principal cities.

Buschman Conveyors

THE E. W. BUSCHMAN CO., INC.
4450 CLIFTON AVE.
CINCINNATI 32, OHIO

Circle No. 17 on Reader Service Card for more information

Speed-up—Simplify Your Handling Operations—AND CUT COSTS!

You can do so many things with a Link-Belt Speeder Cargocrane — you can do them so easily, economically, safely, that this machine can easily become one of your most profitable investments.

Unload cars outdoors, carry the material right into the plant without re-handling. Stock pile every sort of material quickly, easily. Drive the Cargocrane into narrow aisles, through low doorways, over railroad tracks or uneven ground, and turn it around "on a dime." The YC-9 will lift 10 tons, carry it forward at nearly 7 m.p.h. Steering, lifting and swinging are controlled by hydraulic power — giving precision control, smooth accurate positioning of load, no back-lash or lost motion. Boom swings full circle!

Send for 16 page illustrated book on advantages of Link-Belt Speeder Shovel-Cranes on industrial materials handling applications.

11,794

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of
SHOVELS-CRANES-DRAGLINES

Circle No. 18 on Reader Service Card for more information

LETTERS TO FLOW . . .
(Continued from page 16)

equipment. The price, $5.00 per copy; the frequency of publication once every two years.—Ed.

To FLOW:
Widely Used Reference

In several books I have seen reference made to The FLOW DIRECTORY OF MATERIAL HANDLING EQUIPMENT, MACHINERY AND ACCESSORIES and its Equipment Reference Guide. Are you the publishers of this guide? If so, can you advise me as to the contents and the price? —J. H. Roberson, Cleveland, Ohio.

See explanation given with letter titled "The Directory", above.—Ed.

To FLOW:
FLOW Abroad -

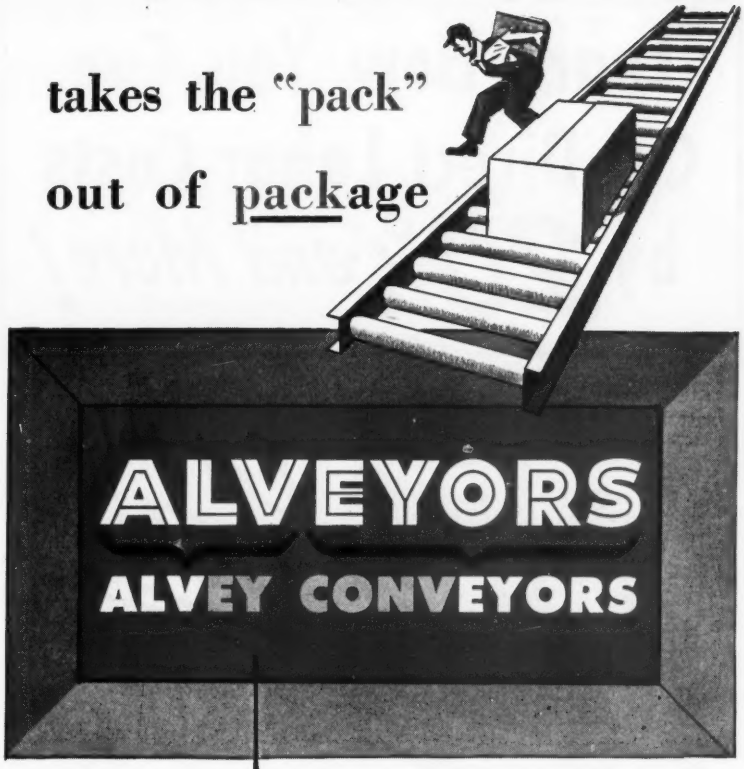
Might we have a sample copy of your publication "FLOW". This request arises from an inquiry received from our Paris representative, to whom we plan to send the copy.—E. H. Roberts, Librarian, Designers for Industry, Inc., Cleveland, Ohio.

To FLOW:
Right Grapple For Job

Here at this Shipyard the occasion frequently arises when it is necessary to handle several hundred concrete blocks. These blocks are of two sizes—4 ft. high by 4 ft. wide by 4 ft. long, also 4 ft. high, 1 ft. wide by 4 ft. long. These weigh approximately 9800 lbs. for the larger size and approximately 2400 lbs. for the small size. At present, these are moved from place to place by means of a traveling gantry crane and slings hooked into padeyes which are welded to steel bands bolted to the concrete block itself.

On page 16 of "Flow" for June 1950, there is shown in the lower right illustration of Coles Cranes, Inc. advertisement an auxiliary attachment (carpet tongs) which

takes the "pack" out of package



Select ALVEY

BELT CONVEYORS
LIVE ROLLER CONVEYORS
GRAVITY ROLLER CONVEYORS
CHAIN CONVEYORS
APRON CONVEYORS
INCLINED CONVEYORS
DECLINED CONVEYORS
PUSHER BAR CONVEYORS
WHEEL CONVEYORS
BELT TABLE CONVEYORS
SPECIAL PACKAGE CONVEYORS
VERTICAL CONVEYORS

Manhandling anywhere in the plant is a labor cost that affects profits. Get rid of it every place you can.

ALVEYORS are engineered to cut manhandling to the very minimum. Alvey conveyor specialists have been working out specific conveying problems through a third of a century. The experience they have gained, particularly from mastering unusual layouts and varied handling requirements, can be of special value to you. Feel free to consult Alvey specialists on any of your handling problems. Just write or phone

ALVEY CONVEYOR MFG. CO.
9299 Olive Street Road, St. Louis 24, Mo. Branch Sales Offices in Principal Cities
Circle No. 19 on Reader Service Card for more information

Learn How You Can Cut Direct Labor Costs by 20% and More!

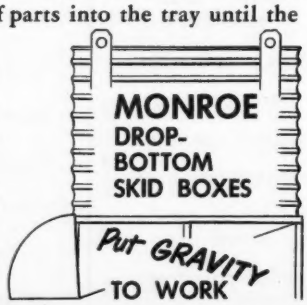
Get this CATALOG

By keeping small parts always accessible to machine operators and assembly line workers, Monroe Drop-Bottom Skid Boxes eliminate stooping, bending and other waste motion. With handling thus speeded, many customers report savings of 20% and more in direct labor costs.

A hand lever releases the hinged bottom of the box to a slanting position, sliding stampings, forgings and other parts into a waist-high tray of the matching work stand. Gravity maintains a replenishing flow of parts into the tray until the box has been emptied.

Monroe Drop-Bottom Skid Boxes are easily removed or replaced on production lines by conventional high lift trucks.

It will really pay you to investigate how you can put gravity to work—with Monroe Drop-Bottom Skid Boxes.



Send Coupon for Free Catalog

MONROE AUTO EQUIPMENT CO., MONROE, MICH.

Gentlemen: Please send me your free catalog on the Monroe Drop-Bottom Skid Box.

NAME.....

FIRM.....

ADDRESS.....

CITY.....STATE.....

Circle No. 20 on Reader Service Card for more information

I feel will expedite the handling of the blocks mentioned. I will appreciate very much if you could advise me as to who the manufacturer of this special attachment might be.—Harry R. Simpson, Head, Planning & Estimating Div., Public Works Dept., Norfolk Naval Shipyard, Portsmouth, Va.

To FLOW:
Automotive Handling

We read enthusiastically every issue of your very fine material handling magazine. . . . We would like, though, to see more articles on modern-day automobile material handling, including the details of intra-plant handling which presents a number of complicating problems.—R. T. Thorn, Manager, Production Control, Ford Motor Co., Kansas City, Mo.

The report in the April issue "Engineered Loads Solve A Problem of Long Supply Lines" should come close to meeting Reader Thorn's request. Recent issues have carried various articles on specialized aspects of automotive plant operations. More articles of the type indicated by Reader Thorn are in preparation for early publication.—Ed.

To FLOW:
Tilting Conveyor

We are interested in obtaining information regarding tilting pallet conveyors similar to those shown in your February issue of FLOW.

We are planning to convey one hundred-pound bags of mill feeds from a packer to a loading dock. The route we are forced to follow involves two 90 degree horizontal turns, and three unloading points.

We would appreciate receiving any literature that would help us solve this problem.—Glenn Enslow, Engineering Dept., Harvest Queen Mill & Elevator Co., Plainview, Texas.

This type of conveyor was illustrated on page 30 of the February issue, and was used for transporting bananas.—Ed.

Your industrial supply distributor can help you CUT MATERIALS-HANDLING COSTS'

Reducible 30%

Your local Bassick distributor, handy as your phone, can help you cut today's *only* readily-reducible expenditure, materials-handling . . . 30% of total manufacturing cost.

He can show you how Bassick casters, wheels and wheel mountings save production time, reduce maintenance on floors and "rolling stock."

Your distributor, storing thousands of items to quickly serve your needs, is your best, most economical source of supply. Know and use him! Bassick's own salesmen and engineers will work with him to solve your special problems . . . backed by the facilities of the world's largest manufacturer of casters.

Are you familiar with the cost-saving opportunities of Bassick "FLOATING-HUB" shock-absorbing casters, casters with grooved wheels, position locks, the new "Alcore" rubber-tread wheels, etc.? See your distributor!

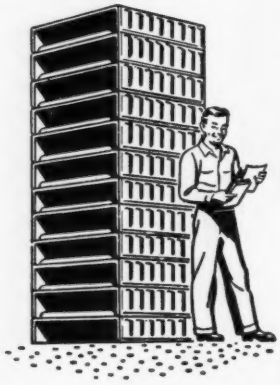
THE BASSICK COMPANY, Bridgeport 2, Conn. Division of Stewart-Warner Corp. *In Canada:* Bassick Division, Stewart-Warner-Alemite Corp., Ltd., Belleville, Ont.

Bassick

Making more kinds of Casters . . . Making Casters do more

Circle No. 21 on Reader Service Card for more information

SAVE SPACE!



Pile Many in Small Space!...

Showing the new Truscon Collapsible Steel Box with three sides fully up and fourth side almost completely in place.

New Collapsible Truscon Steel Box

Save space...get more efficiency in your plant...with this unusual new Truscon Steel box design! It can be knocked down or set up in a moment. Handles equally well with platform or fork truck; can also be equipped for crane or industrial truck handling. When in upright position, collapsible sides are locked by pin and slide bolt arrangement. Available in various widths, lengths, heights. Can be tiered when loaded or empty, to help greatly reduce unproductive floor areas. Write for details.

FREE BOOK! *Describes complete line of Truscon Steel Boxes and Skids for materials handling. Shows wide range of models to meet any requirements you have. Write for your free copy.*

TRUSCON STEEL COMPANY

PRESSED STEEL DIVISION

6100 TRUSCON AVENUE • CLEVELAND 4, OHIO

SUBSIDIARY OF REPUBLIC STEEL CORPORATION

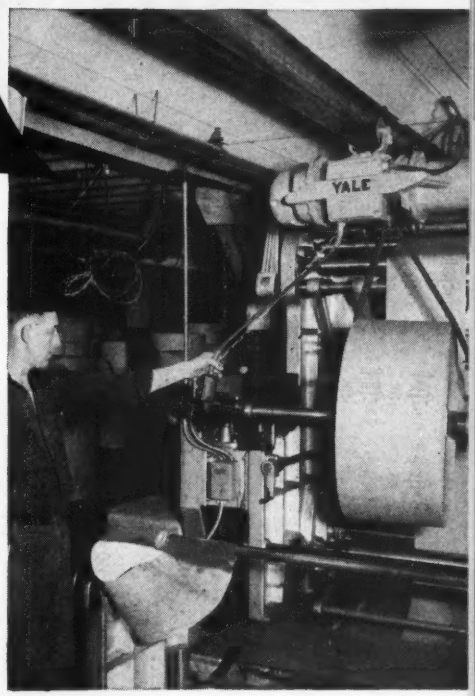
Circle No. 22 on Reader Service Card for more information

IT'S YOUR MOVE... toward lower costs

Efficient motion is the key to efficient production. But no longer can industry confine efficient motion to processing operations. Now *material handling* must be included if you hope to cut costs substantially.

Material handling takes a 30% slice out of every production dollar. To reduce that cost thousands of companies are already using Yale Material Handling Machinery. For example, $300 is saved on each press produced by a manufacturer in Ohio by using Yale Hoists. A grocery warehouse spent $44 to unload a box car until a fork truck was purchased. Then the cost dropped to $7. In another case a company gave up counting parts by hand and now uses a Yale Scale to count by weight. Result: greater accuracy and many hours saved each week.

You want lower costs and you want them now. Our nearby representative will gladly give you the benefit of his broad experience in saving time, effort and money for all kinds of businesses. It's your move! Phone him—or write direct to Yale.



YALE
TOOLS THAT KEEP INDUSTRY "ON THE MOVE"

THE YALE & TOWNE MANUFACTURING CO.
Department L-124 • Roosevelt Boulevard • Philadelphia 15, PA.

YALE

MATERIAL HANDLING MACHINERY · *hoists . . . hand and electric · trucks . . . hand lift and power · industrial dial scales*

20%

ADDITIONAL K.W.H. CAPACITY

C & D FIVE-FOLD *Slyver-Clad*
Industrial Truck Battery

**Catalog IT-515
Available
On Request**

-at NO extra cost!

C & D BATTERIES, INC.

TELEPHONE · DIESEL · ELECTRIC INDUSTRIAL TRUCK · LOCOMOTIVE · STARTING & LIGHTING

Established 1906 **of Conshohocken, Pa.**

SALES AND SERVICE
IN PRINCIPAL CITIES

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STORING PATTERNS EFFICIENTLY

How one foundry stores and handles 300,000 patterns ranging in weight from 1 lb. to 10,000 lbs. Irregular shapes and the wide variety of sizes further complicated operations.

PLANT No. 2 of the Toledo Division, E. W. Bliss Co., produces all castings for presses which bear the division's name. Bliss manufactures more types and sizes of metal-working presses than any other company in the world. More than 2,000,000 lbs. of castings are produced each month in this plant. An output of two and one half times that amount is possible, computed on a basis of a 20-hour day and a five-day week.

Production is complicated since most presses are custom-built and usually an order will specify only one or two. Of the more than 300,000 patterns on hand, many are modified and new ones are built to customer requirements. Finished castings range in weight from ¼ lb. to 70 tons each.

For Pattern Storage Efficiency

One of the company's problems was pattern storage with efficient transfer methods to the pattern shop and to the foundry.

The irregular shapes of the patterns make storage difficult. Smaller patterns are often piled on larger ones to conserve space. The large number of patterns means that all cannot be stored in such a way that they may be immediately reached.

Formerly, patterns were stored in a 50′ x 300′ building, in small sheds, on the ground in the yard, and at the main plant, one mile away. For transfer from the storage building to the pattern shop, a distance of some 50 ft., a block and tackle was used to spot the loads under a monorail propelled by manpower. Very large patterns were moved on wooden rollers. Return-

(Turn to page 44)

LEFT, 15,000-lb. fork truck easily picks off patterns. Note markings of bays, sections.

BELOW, storage used to look this way when manpower was the chief means of locomotion.

Looking Ahead

To The 1951 Show

The fourth Annual Material Handling Exposition, scheduled for Chicago, April 30 - May 4, 1951, is again sponsored by the Material Handling Institute, Inc. Assembled will be the most extensive display of operating material handling equipment. A new feature is an outdoor space for yard handling equipment.

THE entire indoor area allotted to the fourth National Material Handling Exposition in 1951 has been leased by companies which exhibited previously, according to the latest word received from the material handling exposition management. At a special drawing, held at the Hotel Commodore in New York City, all the available space was exhausted; companies which participated in the earlier shows had first choice. In order to give new exhibitors the best possible accommodations, it was decided (after the drawing) to open two additional halls on the second floor of the amphitheatre.

The addition of a large outdoor area, an innovation at the next show, will permit demonstration of yard handling equipment under actual operating conditions. Such an advantage was not possible at the earlier shows. The total outdoor display area will comprise four acres, with six acres indoors.

The Material Handling Institute will sponsor the exposition. The American Materials Handling Society has agreed to organize the technical sessions.

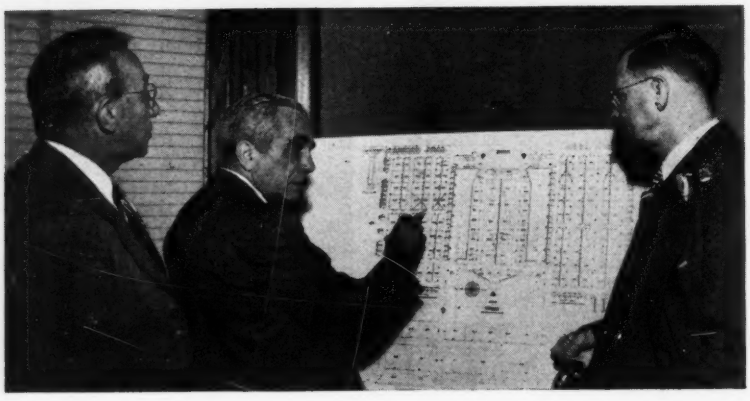
The Institute, with headquarters in Pittsburgh, is composed of a group of leading manufacturers of material handling equipment.

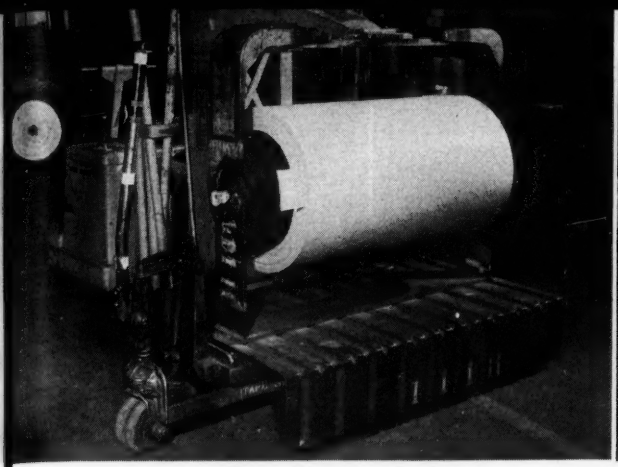
A survey conducted by Elmo Roper after the third exposition revealed that 90 per cent of those attending were either responsible for machinery purchases or were in a position to influence such purchases.

While the previous shows were held in Cleveland and Philadelphia, the decision to move the show westward was made to stimulate a wider attendance from midwest and far western states.

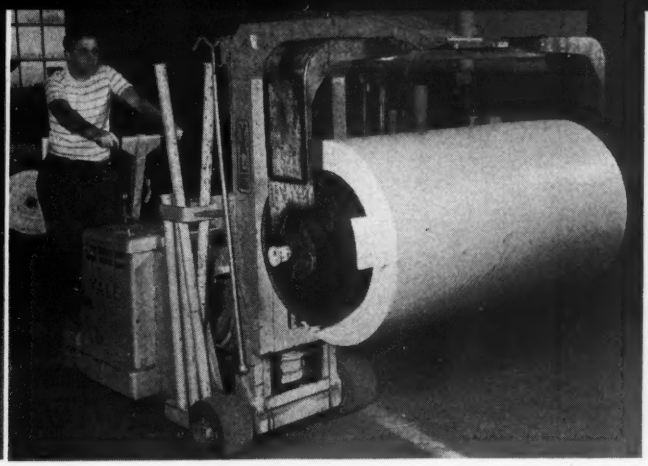
An Institute spokesman said he considered the results of the advance sale of space a satisfactory indication that the total sale will be greater than that at the Philadelphia exposition in 1949. It is well to remember in this connection that in only three years the national material handling show became one of the country's five greatest industrial expositions.

George G. Raymond (left), president, Lyon-Raymond Corp., selects his booth space at drawing. He is shown with T. Clapp, president of exposition management, and Harrison C. Bristoll. He is vice president and general manager of the steel strapping division, The Stanley Works, New Britain, Conn. Bristoll, a director of the Material Handling Institute, drew the company names from a fishbowl and determined the order of selection of space.

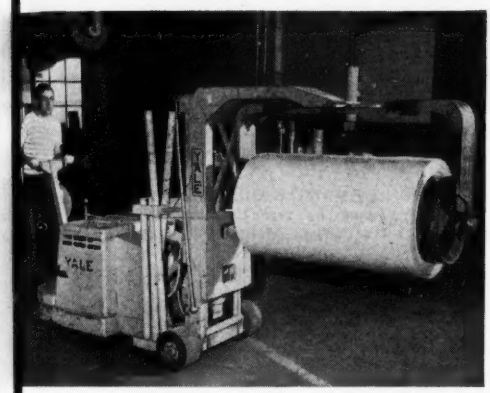




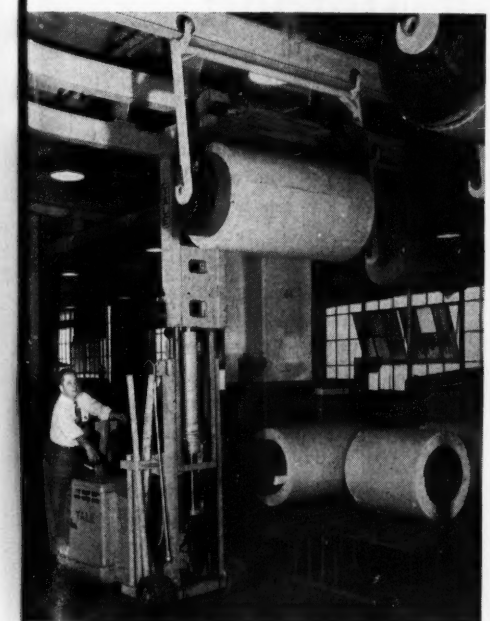
1. STACKING TYPE WALKIE picks off coated roll from skid-mounted stand for delivery to . . .



2. STORAGE department. In next photo you can see that roll (for travel) is turned in the . . .



3. DIRECTION OF TRAVEL, which avoids contact that would harm material. Next photo shows the . . .



4. OVERHEAD STORAGE METHOD on system of trolley mounted hooks. Delicate material is not touched.

HANDLED . . . But Not Touched

By W. G. BRETSON
Methods Engineer, Tape Division
Minnesota Mining & Mfg. Co., St. Paul

THE product shown in this photo report is pressure sensitive tape. Contact with any surface would harm the material, and hence the rolls are supported from the cores or mandrils during all moves. The stock originates from a coating operation. The 1700-lb. rolls are conveniently handled on short moves by use of the hand lift truck and the skid-mounted stand shown.

For longer moves and subsequent stacking operations, a motorized hand-guided truck is used which has been modified with a special attachment. In place of the fork, the truck has a boom attachment with a rotating yoke and hook assembly. The latter has a ball and tendant in the bearing so that the load can be locked in the direction of travel during transfers. Lifting and lowering are accomplished with the standard controls in the handle.

To prevent dropping of the load from the yoke arms during transit (from heavy jarring), the yoke arms are spring loaded. Thus, the heavier the roll and the greater the shock, the tighter the load is gripped. At the storage location, the roll is again turned broadside to the truck, ready for hoisting.

Note the lengths of pipe in the rack at the side of the truck. While the load is engaged by the mandril for on-the-floor transfers, the pipe is inserted as supporting member for storage on the overhead carriers. The operator also carries in the rack a hook for moving the carriers on the overhead rail into loading and unloading position.

In these and other moves, the pressure sensitive tape is not touched once. Thus the truck accessory gives the product protection for which it was designed.

BRIDGE CRANE lifting transformer from low-bed trailer to inspection. Rail platform at left.

DISMANTLING IN "B" BAY can be done by crane or the jib hoist, shown. Moves here by skid.

Effective Crane-and-Skid Handling Method

EVERY so often you see, from the window of a moving train or automobile, a series of transformers grouped in a heavily fenced power station—and you may have wondered about the tools required for moving these bulky shapes around when they must be handled in a repair shop. That's the question this discussion is intended to answer.

Skid-Hand-Truck and Crane Method

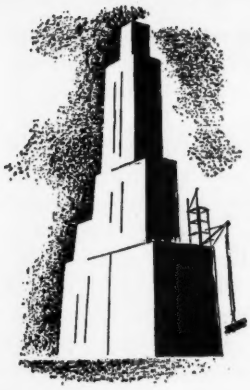
A sizable volume of transformers and rotating equipment arrives regularly at this recently completed repair shop of the Westinghouse Electric Corporation. By way of explanation, the Northwestern District Manufacturing and Repair Department comprises four plants which are devoted to specialized manufacturing and miscellaneous repair work.

Specifically, this service is performed in the Chicago plant's repair department for rotating equipment and transformers used in industry and public utilities. This includes motors, generators, and transformers of the various horsepower, kw, kva, and voltage ratings. Service is also available for the repair of diesel-electric traction motors and generators. When the urgency of the repair work requires, around-the-clock service is provided.

The department's material handling system consists of a variety of overhead and on-the-floor handling tools, which are designed for economical transportation of units large and small. The main repair bay (60′ x 400′) is at the west side of the 250,000 sq. ft. plant, and is covered by two pendant controlled electric bridge cranes of 15-ton capacity. Floor-controlled cranes were chosen for the reason that this type of job operation is necessarily intermittent, and thus the presence of a full-time crane operator is not re-

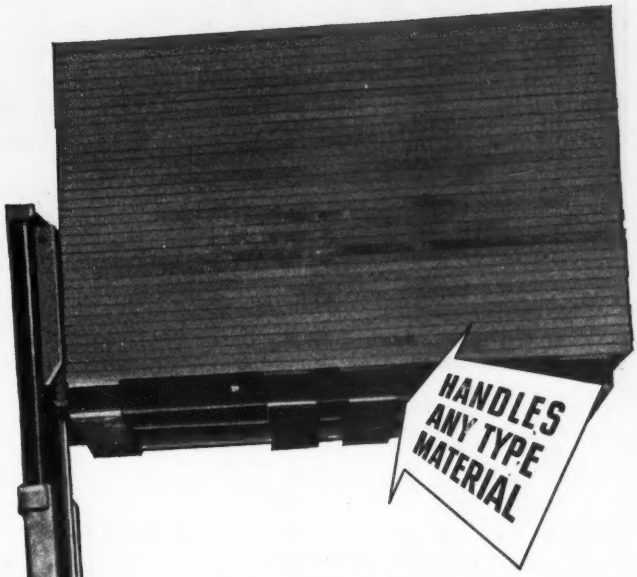
By J. R. PRATT

Supervisor, Methods Engineering
Northwestern District
Manufacturing & Repair Dept., Chicago
Westinghouse Electric Corporation



Skyscrapers were built for the same reason!

Skyscrapers were built due to high cost of land values or ground area. It was far cheaper to go *up* instead of spreading out. Towmotor HIGH STACKING offers the same cost-saving opportunity to industry. Heavy merchandise is stacked *ceiling-high* to save valuable warehouse floor space... to free areas for needed production lines. Learn how you can cut production costs and increase profits with modern Towmotor Mass Handling. Write for "Handling Materials Illustrated." Towmotor Corporation, Division 8, 1226 E. 152nd St., Cleveland 10, Ohio. Representatives in all Principal Cities in U.S. and Canada.



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Arrange now for a private showing of this unusual film before your own factory group or right in your office. Write for details.

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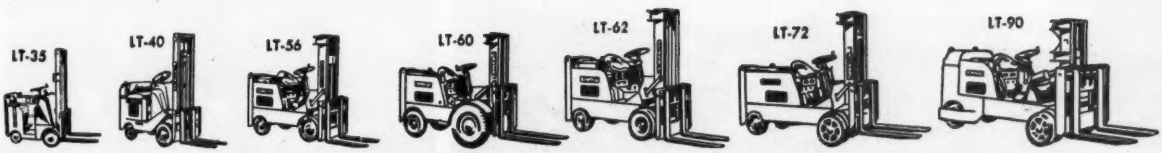

7 OF THE 12 STANDARD MODELS FOR HANDLING 1500 TO 15,000 LB. LOADS

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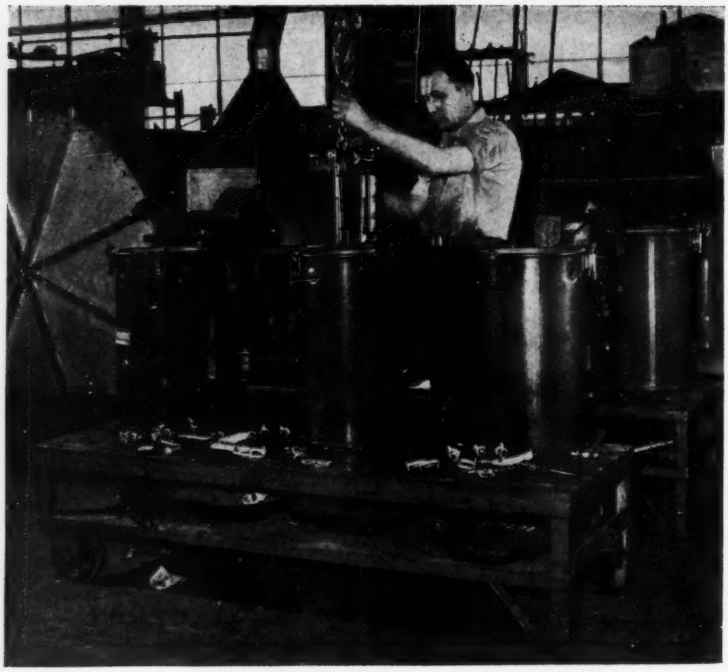


TANKS (of distribution transformers) on semi-live skids. These skids are both benches, transport medium.

quired in a cab. Because of numerous jobs going on simultaneously at different stations in the long bay, the presence of a crane at either end provides lifting service when and as needed.

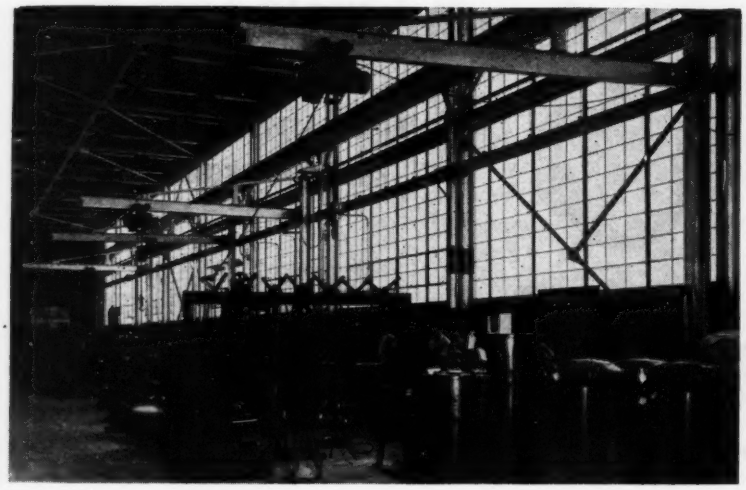
A railroad siding enters the plant at the north end for a distance of 75 ft., with a truck dock at right angles to the rail car receiving area. An overhead power door serves each entrance. The arriving transformers or motors are thus delivered under the 60-ft. span of a crane, which performs all unloading tasks. The area immediately adjacent is the receiving-inspection department.

From here, the movement of the units is generally north to south, though the size of the equipment makes some difference in regard to the particular bay in which the repair work will be done. This is explained in a later paragraph.

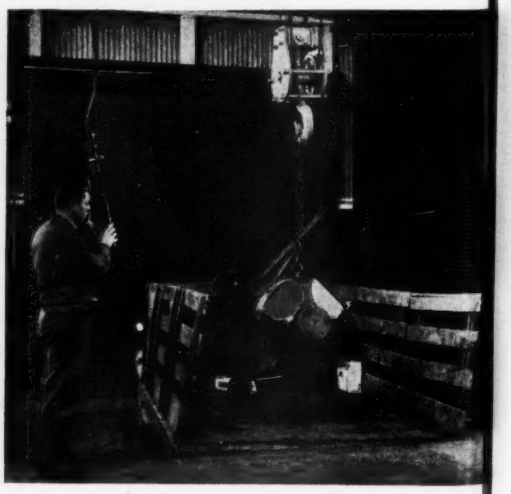
A fairly large volume of the smaller distribution transformers is handled regularly. These are transferred to the bay adjoining the receiving section for dismantling, cleaning, burning, scrap salvage, and painting of the tanks. The transfer is accomplished by means of a 2-ton electric hoist operating on a 20-ft. jib. The work stations in the second aisle are laid out for progressive moves from one operation to the next. The jib hoist serves the dismantling operation, and lifts out the cores and coils from the tanks. All subsequent on-the-floor moves between the closely spaced work stations are performed by the skid-hand-truck method.

This second 60-ft. bay is one of the busiest sections in the entire department, since practically all incoming units pass through it preparatory to later assembly in the south portion of the bay. This

JIB HOISTS in machine shop make operators independent of crane which cover this bay.



SHIPPING: Reconditioned equipment is lowered by crane on outbound truck.



MAN-HOURS CUT IN HALF

– storage space increased 20% with

BAKER TRUCK

A typical case history of improved WAREHOUSE HANDLING with a BAKER type FQ (Light-weight, low-cost) FORK TRUCK

Mitchell Sales and Storage, Inc.,

of Fort Wayne has cut labor costs and increased available storage space by substituting Baker Truck —pallet handling for hand methods.

In this warehouse, all quantity movements of 100 lb. bags of flour, sugar and other items are now handled in unit loads by the Baker Truck. These include moving pallet loads from and into box cars and highway trucks, and stacking to the ceiling in storage. Formerly this was done by hand, with 2-wheel hand carts. Each bag had to be man-handled at least twice (often 3 times since bags were also stacked manually) to complete in and out movements.

In addition to a 50% cut in man-hours, the Baker Truck has added 20% effective storage space by stacking bags 12 instead of 10 high—the maximum possible by hand methods.

Mitchell estimates that the truck, now 8 months old, paid for itself the first month it was in service.

Similar savings may be possible in your plant or warehouse. A Baker Material Handling Engineer will show you how.

BAKER INDUSTRIAL TRUCK DIVISION *of The Baker-Raulang Company*

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LOW-LIFT HY-LIFT FORK & RAM CRANE TRACTOR PLATFORM

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Special TYPES ARE STANDARD at Fairbanks

HAND TRUCKS of special design required for many industries are run-of-the-mill stock items in the Fairbanks catalog. There's a type for every need . . . of sturdy design, high grade materials . . . and built to last. Here are some typical examples. If you don't see what YOU need—ask for it.

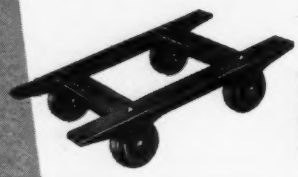
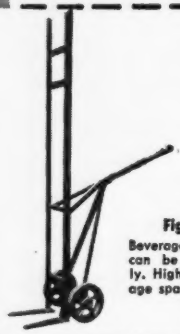


Fig. L 1191 Malleable Iron CASE TRUCK
Built to take the shock of heavy packing cases, boxes and machinery. Indestructible yet light in weight One ton capacity.

Fig. A-1448 All Steel UTILITY HANDTRUCK
Ideal for bags, cartons, cases and small kegs. Solid nose plate, curved cross bars, welded center strap; fitted with step climbers. Load rating 400-500 pounds.



Lever Trucks (Pry-Bars)
Tremendous leverage to handle heavy cases, crates, machines, etc. Raises loads 9" from the floor, 5, 6 and 7-foot lengths.

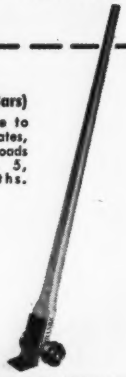


Fig. CC-10 TIER TRUCK
Beverages, cartons and crates can be handled more efficiently. High stacking cuts down storage space. Capacity 750 pounds.

Fig. 500 JACK and PLATFORM TRUCK
Efficient, low cost lift jack and platform system increases production, cuts costs. Many standard platform sizes available; special sizes to order.

Fig. 9304 HAND TRUCK
Long, sloping lines "break" the load easily. Steam-bent handles prevent crushed fingers when handling large cases.

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heavy traffic in turn necessitates frequent lifts. This hoisting service is available from a specially designed series of light-duty pendant controlled cranes. The 60-ft. width of the bay is divided into two parallel 30-ft. craneways, extending through the full length of the area, on which six two-ton hoists are installed. Thus crane service is constantly available at work stations on both sides of the area. The availability of the cranes makes for flexibility and, while it facilitates the individual handling required by the job shop operation, it also speeds production by permitting simultaneous handling of a variety of units at numerous work stations.

Mobile Work Benches

After painting, the (small) transformer tanks are advanced south by the skid-hand-truck method to assembly in the same bay, where the core, coil, and bushings are installed. The tanks are then filled with oil and vacuum treated.

In the assembly department, the tanks are placed on portable benches which are 3′ x 6′ double deck semi-live skids, as shown in one of the exhibits. These work carriers were specially designed for assembly of the smaller transformers. The lower of the two decks serves for storage of the covers—it is important that they be kept together with the tanks. The top deck is 18 ins. above the floor, which gives a reasonable working height during the assembly operation. Further, by having two rigid legs at one end, the skid has the necessary fixity while assembly is being performed. Upon completion of the job, the "bench" becomes a transportation medium through the addition of the jack handle. The skid load is then wheeled to the truck shipping dock. Usually the disengaged jack handle will be used for returning an unloaded skid from the dock to the assembly section.

The application of the semi-live skids has proved a simple solution to the problem of how to make a work bench mobile. The skids must

be moved periodically to different stations as the assembly progresses. Since these moves are often no more than 10 ft., the units are well designed for the purpose.

Taking the Parts to the Job

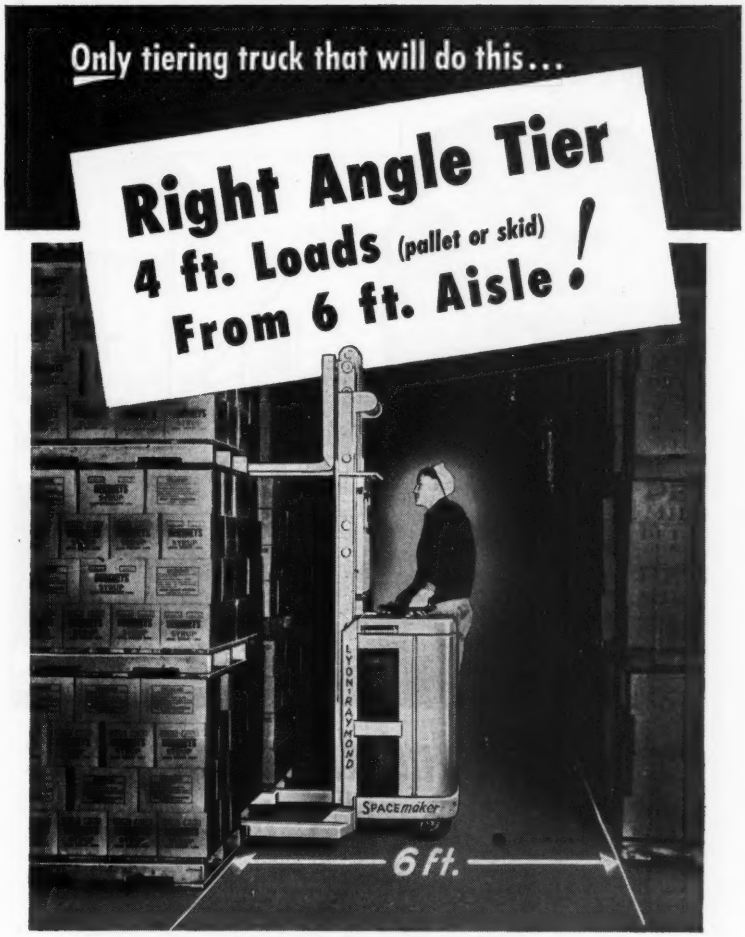
The larger transformers are the main exception to the practice of transferring the incoming units to the disassembly-cleaning station in the second aisle. The tanks alone go to this cleaning area. The reason for this will be apparent presently.

The large transformers remain in the main repair aisle, in an area adjoining the receiving station. In planning the layout and handling tools for this new plant, a special problem had to be considered in connection with the large transformers. For crane clearance a minimum height twice that of the transformer is needed. The larger of these units may be 15 ft. high. Since the cranes were planned with a clearance of 25 ft. above floor, a pit 10 ft. deep was built adjacent to the railroad siding in the shop.

The large transformers are lowered into the pit, and then the core and coil unit is lifted out, whereupon the tank is lifted to the shop floor. If the weight of a transformer should exceed the capacity of one crane, then both will be coordinated in making the lift.

After dismantling, the core and coil may be only repaired, then cleaned, dipped and baked. Or it may be rewound. The crane will deposit the large cores and coils on skids for movement to the various stations indicated.

Economy of movement is ever the watchword. The apparatus parts are both costly and vulnerable to damage; hence the least handling is the best handling. Because of their size and weight, the large transformers are reassembled in the same general area adjacent to receiving, and shipped from here. On the small apparatus, it is more economical to move the light units to the work, while in the case of the



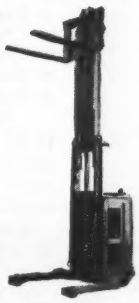
New LYON-Raymond SPACEmaker
Electric Tiering Truck

You'll have to see it to believe it! The new Lyon-Raymond SpaceMaker actually positions for right angle stacking in aisles narrower than its length *including load*. Does it so easily that anyone can maneuver it. No other tiering truck does anything like it—it's the result of an entirely new design concept —and it means you can utilize up to 40% more of your aisle space for additional storage. Here's why—

SHORTEST LENGTH *ever* — eliminates counterweight space. Load stabilized by ingenious four-point wheel locations.

GREATEST MANEUVERABILITY *ever* — easiest and speediest in tight quarters through 200° turning arc of offset drive wheel. Spring mounted swivel caster compensates offset drive.

LIGHTEST WEIGHT *ever* — makes possible tiering operations on low-capacity floors. Safe floor-to-floor traffic via small, low-capacity elevators.


Straddle Type, Telescopic

Models for tiering single- or double-face pallets; skid platforms. Get complete information! Learn about the many cost-saving applications never before possible with a tiering truck! *Write today for Bulletin 701.*

Platform Type

LYON-Raymond CORPORATION
Electric Power Trucks . . . Skid and Pallet Lifts
Hydraulic Elevating Equipment
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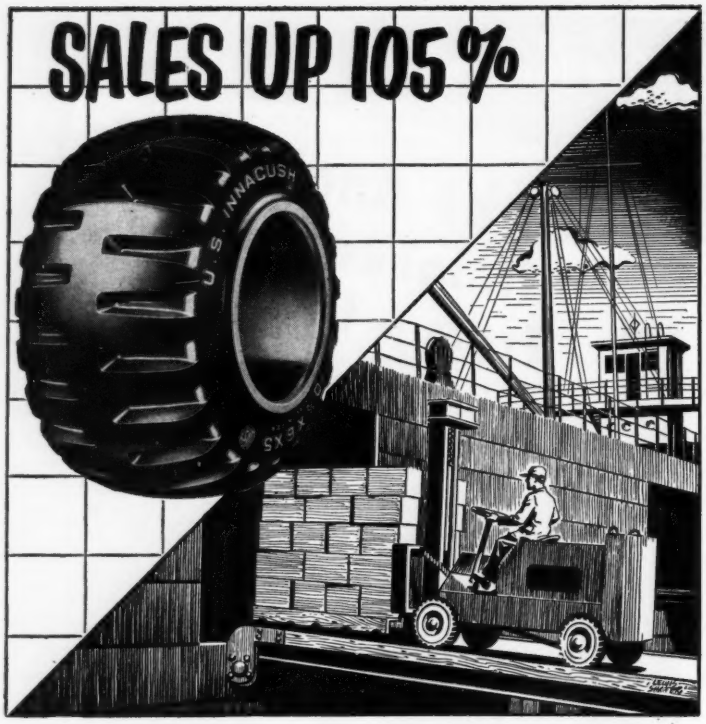

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Here's what the U. S. Innacush can do for you:

- ★ Reduce steering gear and bearing maintenance.
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- ★ Give you a tougher, deeper tread for long, even wear and easy steering.
- ★ Give you a special inner cushion rubber for maximum shock absorption, yet increased carrying capacity.
- ★ Give you a tire less subject to chipping and cutting.
- ★ Give greater riding comfort.
- ★ Give maximum traction even under extreme loads with its lug tread design.

U. S. Innacush is available in a complete range of sizes for almost every industrial truck, and is only one type in a complete line of U. S. Industrial Tires ready to serve your materials handling needs.

Your U. S. Royal Distributor can show you how the U. S. Innacush and the entire U. S. Industrial Tire line will save you money, and how his on-the-spot service will cut your "down time" costs. He's in the Classified Telephone Book—call him today.

U. S. ROYALS

***Products of* UNITED STATES RUBBER COMPANY**

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large equipment it is more economical to bring the parts to them.

Motors. Schedule for Quick Turnover

Incoming motors are likewise transferred by the bridge crane and jib hoist combination from receiving to the adjoining bay for dismantling and cleaning, whereupon the diagnosis is written up in a work report. If a rewinding job is to be done—on an armature of a DC motor or a stator of an AC motor—the unit will first go to the incinerator area for the burning off of the insulation. As in the case of the small distribution transformers, lateral movement through this section is by the skid-hand-truck method, while vertical lifts are made by use of one of the several two-ton bridge cranes covering this bay. After the cleaning and burning follows the sand blast booth, where any remaining burned insulation is removed.

A crane then spots the armature or stator on skids for delivery to the winding section, awaiting the manufacture of new coils. The end bells or end bearings are placed on skids and moved to temporary storage adjacent to the machine shop, which is approximately two-thirds the distance of the aisle from the receiving department.

For any machine work to be done—rebabbiting bearings or the making of a new shaft, for example—each machine has available a two-ton jib hoist. The use of these makes the machine operators independent of service by the second 15-ton bridge crane which spans the bay at this end. The hoists enable the men to load the machines, position the pieces and unload them upon completion of the work. Machine work, it should be mentioned, is done on some of the parts at the same time that the rewinding is performed. Such scheduling helps the delivery date and the turnover time.

While four jib hoists (along the west wall) serve the machine shop, three additional jib hoists, on the opposite side of the bay, serve the

armature assembly, the varnish dip tanks, and related stations.

After the coils are manufactured and wound into the armature or stator, they are dipped and baked. The oven trucks are standard low-bed flanged-wheel flat cars. The armature or stator will then advance south by skid. The armature will go to the machine shop for commutator turning, then (again by skid) to the assembly area at the far south end of the bay. The stator goes directly from dip and bake to the assembly area. After testing, the motor continues another short distance south to the crating department, thence to shipping at the far end of another bay.

Like the busy processing and assembly bay, the shipping area is likewise covered by two-ton cranes whose 30 ft. span extends halfway across the width of the bay. Again, the dual facilities for lifting tend to speed the loading, or make possible simultaneous loading and unloading of trucks. A third crane at the far end of this bay serves storeroom activities.)

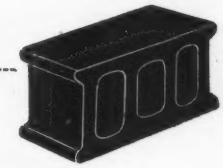
In summary, the handling tools described were planned as an integral part of this new Westinghouse repair department for transformers and rotating equipment. While the "individual" handling for job shop requirements is adequately met, the presence of "enough" handling tools keeps the units advancing as far as possible on a "production" basis through the processing and assembly area. It will have been noted that such simple special devices as the mobile work benches are an important aid both to economical in-plant transportation and production. Note, also, that the large transformers are assembled in an area directly adjacent to the rail siding or the truck dock.

Use the postcard bound into this issue for more information on advertisements, New Products and Free Literature. Note the number to circle below each item.

More Beer.....

More Bulbs.....

More Blocks.....



VIA Rapistan

And more beef, boards, and bathtubs! Every working hour, these and hundreds of other products are handled efficiently and economically on cost-reducing, space-saving Rapistan Material Flow equipment.

Among people who know handling equipment, Rapistan ranks first. The reason?... *supreme dependability.* Rapistan conveyors are designed to give trouble-free service long after most others have been replaced. Whether you need a single conveyor, or a complete "flow" system to move products through processing, packaging, storage and distribution—buy Rapistan! It's profitable.

SEND FOR YOUR FREE COPY of "Rapistan Material Flow at Work!" See how carloading is cut from 80 to 8 man hours... a processor saves $200 weekly... how unloading costs are cut from $17.10 to $1.90 per car... and how Rapistan can work for you.

The RAPIDS-STANDARD COMPANY, Inc.
197 Rapistan Building **Grand Rapids, Michigan**

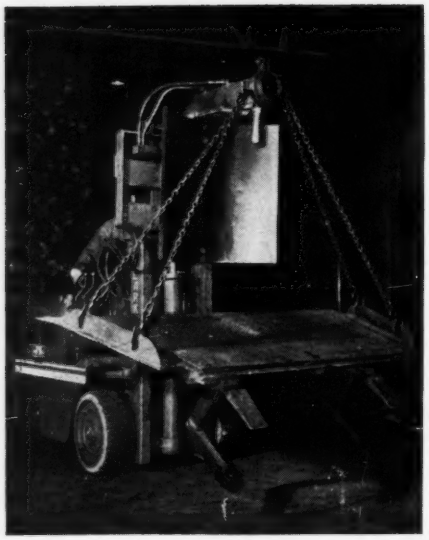
"Rapistan" and "Material Flow"—Trade Marks

Representatives in Principal Cities

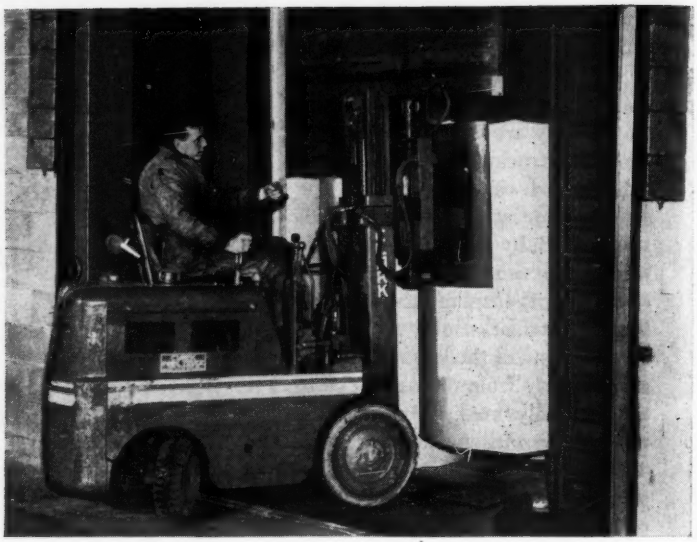
Rapistan®
MATERIAL *flow* EQUIPMENT

CASTERS • HAND AND PLATFORM TRUCKS • OTHER PRODUCTS: CONVEYORS—Power or Gravity, Portable or Stationary

Circle No. 30 on Reader Service Card for more information



1 DOCK PLATE with C frames which support it on car floor. Next photo shows that . . .



2 BARTEL DEVICE makes breaking out the first rolls a one-man job. Drawings show how . . .

NEW DEVICE FOR HAN

Tom H. Bartel

"A rail car of 40 rolls is unloaded in 30 minutes."

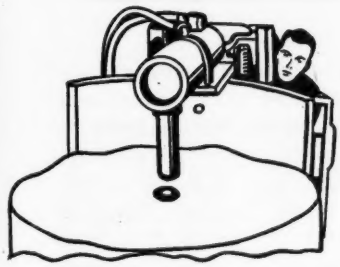
THE Bartel fork truck attachment, named after its co-inventor, Tom H. Bartel, grew out of year-long efforts to handle and tier rolls of newsprint in a vertical position, without the aid of load carriers. The objective was threefold: to shorten handling time, reduce damage to the paper, and use storage space economically. Newsprint handling had been traditionally a slow, tedious process.

Tom H. Bartel, who handles all the newsprint for the *Detroit News* and the *Detroit Free Press*, is a well-known stevedoring contractor of the Port of Detroit. He was looking for an overhead clamping device—a device that would allow newsprint to be set down and picked up with the sides touching adjacent rolls. After years of experimenting with different devices, Bartel came to grips with the question: Can a one-ton roll of paper be handled safely by exerting pressure from the core to the periphery? Tests showed that it could be done. Bartel found that by tapping into the hydraulic system of a fork lift truck he could develop sufficient pressure to lift and carry not one but two rolls of newsprint weighing about two tons. Results after tests with this device: no flatness or pressure damage either on the rolls or cores.

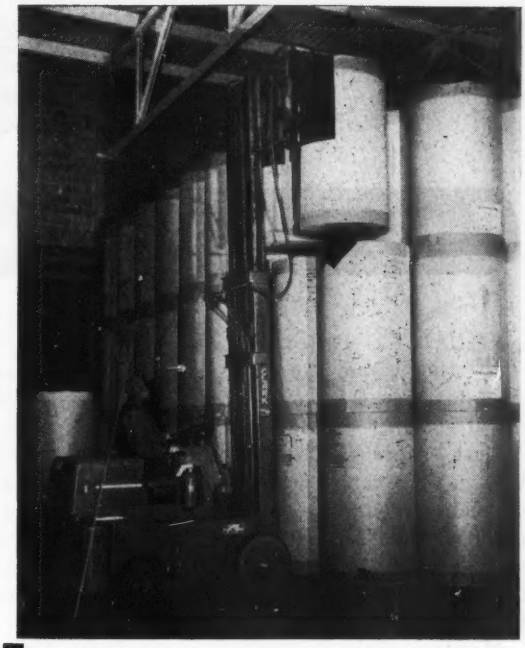
A problem remained. Rolls in transit often become wedged in doorways of cars as a result of load shifting. How, therefore, to break out rolls from doorways and how reach the cores of rolls when the fork truck could not approach them on exact center? The answer proved the swivel feature of the attachment. It enables the machine to reach out from 24 degrees either to the left or right, secure the roll, then return to normal position. Detroit newspaper publishers were convinced that Bartel had devised a new method for loading and unloading newsprint from cars and ships, and transporting the rolls.

Another point was safety in tiering and unstacking the rolls without the use of pallets or dunnage. Bartel and his associates were satisfied. But, in the interest of absolute safety, full-scale operation was delayed until a device had been designed which would eliminate the remote hazard of roll slippage from the hydraulic plug or core pin. Such a safety feature would give operators full confidence (obviously, hesitancy on their part would interfere with production). Also, a safety catch would be assurance against carelessness in manipulation of fork trucks. The foolproof feature became the "safety foot" (shown in

3. SELF-CENTERING curved clamp-plate positions the pin over the core. Then . . .



4. INSERTED PIN IS pulled by hydraulic pressure against plate. In the warehouse . . .



5. DOUBLE UNIT tiers two rolls at time. Arrow shows "safety foot." Final layer is . . .

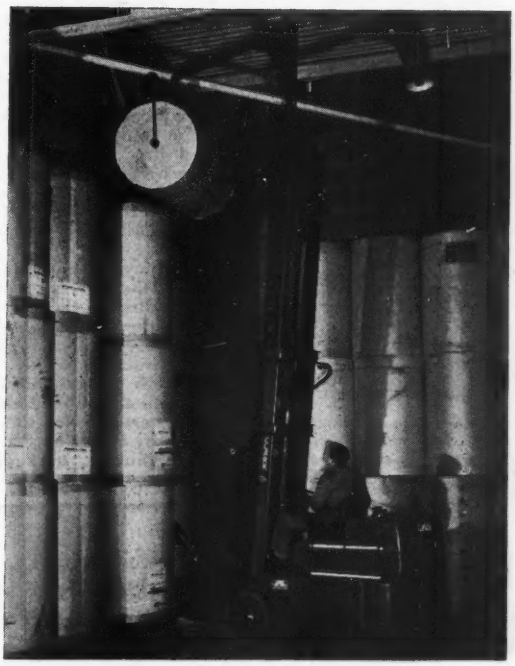
DLING NEWSPRINT

the exhibits). When lifting is begun, it turns into a "catching" position about 1½ ins. below the roll. It recedes to a "clear" position just prior to depositing the roll.

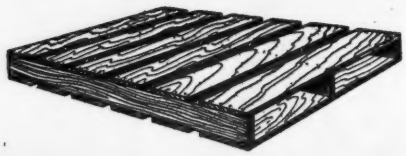
The plugs or core pins (either on the single or double roll device) remain in the position in which they were set during the handling of uniform-diameter rolls. They are adjustable to any diameter from 32 to 45 ins. Single units have been in operation since August 1948 and are attached to 4000 lb. capacity fork trucks; double units (used in tiering) are attached to 7000 lb. capacity models.

Thus far: After the *Detroit News* installed the Bartel method last summer in its new paper warehouse, the *Detroit Free Press*, the *Detroit Times* and the *Flint Journal* followed suit with enthusiasm.

Final point: Bartel gives his associates and co-inventors, H. C. Tims, Paul E. Smith and A. M. Meade, much credit for the perfection of the device. He sees in it a new tool for similar products.



6. BUILT HORIZONTALLY on vertically stored stacks at Commercial Marine Terminal.

ON THE  PALLET

NEWS • VIEWS • TRENDS

"QUALITY Protection" has been selected as the theme for the nine conference sessions to be held in conjunction with the 3rd Western Packaging & Materials Handling Exposition, August 16 through 18 in San Francisco's Civic Auditorium. The conference will stress the importance of quality production at every step in processing a product—from the selection of the type of package and packaging material to its handling through production, into the warehouse, to the dealers' shelves, and finally into the consumers' hands.

Members of the council include Dr. Diehl, director of the Refrigeration Research Foundation; Forrest May, president, Lucky Stores, Inc.; Theodore J. Nelson, packaging engineer, C & H Sugar Corp., Ltd.; Dr. William Rabak, chemist, Western Regional Research Laboratory, USDA; William H. Jaenicke, president, Mailler-Searles, Inc.; E. J. Heimer, Clapp & Poliak, Inc., exposition managers; and Kenneth K. Dean, publisher, Good Packaging.

H. S. Germond, president of the Revolvator Company, North Bergen, N. J., passed away on July 13, 1950, at the age of 79. Germond began his business career about 58 years ago, and early became interested in material handling. He was interested in the hand trucks which were sold by his employer, Fairbanks & Co. He promoted a special truck department and completed a classification of this equipment which he wanted to standardize. In 1910 Germond was made manager of the New York Revolving Portable Elevator Co. in Jersey City. This venture launched him on the career that resulted in the present-day company and which he headed as president since 1917. He is a recognized originator in the field of portable elevators.

His two sons associated with him are: Henry S., 3rd, treasurer and sales manager, and Paul D., head of engineering and secretary.

HAPMAN Conveyors, Inc., Detroit, and The C. H. Dutton Co., Kalamazoo, Michigan, have merged effective May 1, 1950. The new company will be known as Hapman-Dutton Co., with H. W. Hapman as president and general manager, and Robert J. Brown, vice president, ass't. general manager and treasurer. The company will be composed of two divisions: Hapman Conveyors Division and the Dutton Boiler Division. Peter P. Ruppe is ass't. vice president in charge of the Hapman Conveyors Division and J. David is ass't. vice president in charge of the Dutton Boiler Division. Hapman Conveyors Division will have its principal sales office at 19209 West Davison Avenue, Detroit 23. Michigan. Dutton Boiler Division will have its principal sales office at 630 Gibson Street, Kalamazoo 6, Michigan.

THE Material Handling Institute held an educational conference on June 26 at the William Penn Hotel, Pittsburgh. Representatives from various universities and colleges together with several representatives of industry discussed phases of courses that were and should be offered on material handling in colleges. The meeting's morning chairman was Robert C. Brady, educational director of the Institute. J. Francis Carle of Lincoln Extension Institute, Cleveland, was chairman during the afternoon preceedings.

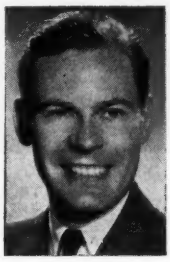
THE Material Handling Institute has published a reference and guide that is jampacked with 150 case histories of profitable material handling applications. "Modern Methods of Materials Handling" is illustrated with 500 photos which picture the equipment and methods described. Copies may be ordered for inspection and held for 10 days. The case studies have been selected so that typical operations are covered in representative industries, giving all readers useful data which they can adapt to their own plants. $5 per copy. Orders should be sent to FLOW Magazine.

INCREASING use is reported in the application of water-resistant paper pallets that can be discarded at the end of a trip. They are made of a corrugated paperboard platform supported by spiral chipboard tubes. These paper pallets reportedly carry a static load of 18,000 lb.

MEN IN THE NEWS

THE Board of Directors of The Baker-Raulang Co. has elected H. Dudley Swim as chairman of the board, Clarence M. Taylor as chairman of the executive committee and John R. Morrill as vice president in charge of sales. This was announced by James W. Moran, president. Swim became a member of the board of directors in 1948.

C. M. Taylor



J. R. Morrill

He is at present a director of the Chicago, Rock Island and Pacific Railroad Co. and a former director of the Pere Marquette Railroad. Taylor is a director of Euclid Road Machinery Co. and a trustee of Fenn College and Western Reserve University. Morrill was formerly with the Lincoln Electric Co. and is a director of the American Welding Society.

CHARLES EDISON, president of Thomas A. Edison, Inc. for the past 24 years, was elected to the newly created position of chairman of the board of directors. Henry G. Riter, 3rd, was elected to succeed Edison as president. Edison, formerly Governor of New Jersey and Secretary of the Navy, succeeded his father, the late Thomas A. Edison, founder of the company, as president of the Edison Industries in 1926. The company had not had a chairman of the board of directors since the death of Thomas A. Edison in 1931. Riter has been a director of the company since Oct. 1, 1946, and chairman of the executive committee since January 1, 1949.

JAMES G. Ehrhorn has been appointed sales manager of Crescent Truck Co., Lebanon, Pa. This was announced by Claude D. Eiler, president. Ehrhorn has been a member of the Crescent sales organization for the past four years. Immediately prior to joining the company, he was in the U. S. Navy where he became interested in the various phases of material handling. He has also been connected with a paper box manufacturer in a sales capacity.

"For want of a nail, the shoe was lost."

—Ben Franklin's Almanac, 1757

Keep thy costs under constant scrutiny, lest a competitor catch thee napping in ye Buyer's Market.

—Acme Steel's Notebook, 1950

Where are today's "horseshoe nails" in your business, Mr. Department Head?

Aren't they those little items of cost, so often overlooked, that turn what ought to be a profit into a column of red ink?

Helping you spot those cost items and nail them down for keeps is where Acme Steel really shines—particularly in your shipping room, in packaging, in materials handling within your plant.

Nine out of ten companies can benefit from greater efficiency, thriftier practices, and cost-cutting Acme Steel Methods when one of our sales engineers starts applying what we have learned to do with Acme flat steel strapping, Acme stitching machines and wire, and other Acme Steel products.

For evidence, we submit here two examples of savings by our customers. There are literally hundreds more actual case studies like these, because more than 50,000 Acme customers are getting these Acme Steel benefits now. Pick up your phone and call the Acme Steel service office nearest you. (There are 46 of these offices in the principal cities of the U. S. and Canada.) Or mail the coupon below for help on your special problem.

SHIPPER SAVES $30 PER CAR

Eastern Gas and Fuel Associates, Everett, Massachusetts, use Acme Unit-Load Band to save time and dunnage materials in carload shipments of 200-lb. barrels of ammonium thiocyanate flakes.

ACME STEEL

Who "owns" Acme Steel? Our 1949 annual report showed 7,538 stockholders—2,730 women, 2,705 men, 1,612 joint accounts and 491 corporations and institutions. Acme Steel stockholders have increased approximately 20 per cent in number in the past two years.

THERE'S LIFE IN THE OLD CASE YET!

Yes, you can add months of profitable use to old beverage cases. Recooper with Acme Bottle Box Band or Acme Rolled Edge Box Strap. It's a quick, easy way to thrift!

ACME STEEL CO. CHICAGO

ATTACH THIS COUPON TO YOUR BUSINESS LETTERHEAD

ACME STEEL COMPANY, Dept. F-80, 2838 Archer Avenue, Chicago 8, Illinois

We manufacture _____. Please send me booklets on Acme Methods checked.

- ☐ Please have sales engineer call.
- ☐ **Shipping (Carload and L.C.L.)**—"Acme Unit-Load"—The story of reduced damage claims and better handling for shippers.
- ☐ **Packaging, Shipping, Materials Handling**—"Savings in Shipping" tells how to save money and safeguard customer good will with Acme Steelstrap.
- ☐ **Bag and Box Assembly**—"Profit by Stitching" demonstrates cost-cutting Acme Silverstitchers and Acme-Champion Stitchers.
- ☐ **Product Assembly**—"Acme-Morrison Metal Stitchers"—for savings in fastening metal-to-metal or metal-to-other materials.
- ☐ **Book Assembly**—"Acme-Morrison Book Stitchers" for savings in the graphic arts field.

NAME _____ POSITION _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

ACME STEEL CO. CHICAGO

Circle No. 31 on Reader Service Card for more information

THE DOLLIES ride on inverted V-shaped tracks. Notches in frame compensate for model lengths.

ROOF OF TROLLEY COACH is spotted by traveling bridge crane. Sides arrive in one section.

USING CASTERS TO GO SIDEWAYS THROUGH ASSEMBLY

Trolley coaches travel sideways through final assembly in this 60-ft.-wide bay—a unique feature in this industry. This arrangement provides the shortest possible travel distances for sub-assemblies which are fed in from each side, an optimum work station layout, and utilizes floor area to best advantage by facilitating assembly operations.

THE important consideration in planning the location and direction of a final assembly line is the flow of sub-assemblies. Sometimes a change of position of the assemblies from the conventional method of travel can mean extra space and motion economies.

The Marmon-Harrington Co., Indianapolis, Ind., illustrates such a change "from the usual" made in the interest of a better material flow. The company is one of the country's leading manufacturers of trolley coaches (passenger vehicles similar to busses which receive their power from overhead electrical lines). Models are manufactured in capacities of from 40 to 48 passengers.

Best Work Station Layout

Shortly after the war, production was converted from Army trucks to coaches. During this change-over, a final assembly flow was laid out which is believed to be unique in the industry. This was moving the vehicles sideways instead of in the conventional end-to-end method. Castered dollies were installed to carry the coaches during assembly, painting and baking.

The final assembly bay is 60′ x 425′ and is served by a 25-ton traveling bridge crane. Flow is from west to east. Fabricated body components feed into the line from the south, purchased components from the north.

By moving the vehicles sideways, 12 stations can be maintained for assembly. If they were sent end to end, only half that number would be possible. While in that case, two parallel lines could be set up, there would be much confusion, time loss and excess handling in moving parts through one line to reach the other.

It is interesting to note that the sides of the coaches are assembled

into one complete section and moved as such to the line. This is also true of ends and tops. At the north side of the bay, such purchased components as drive motors are stored. Because of the heavy weight and bulky properties of these items, it is necessary to keep moves to the line as short as possible. This is especially true of the sides and tops, some of which are up to 32 ft. long (the largest models).

Coaches range in length up to 39 ft. Since the bay is 60 ft. wide, this places the ends of the vehicles within 16 ft. of the feeding departments located in a bay on each side. At the same time, sufficient aisle space is maintained for traffic and maneuvering around the assemblies. There is approximately 25 ft. between the coaches. Because of the many operations performed on each vehicle, this space is needed for operators, tools and materials. The line is advanced one station each day.

How Assembly Is Facilitated

To show the advantages of moving the vehicles sideways during assembly, take for example the placing of sides. These flow in a straight line; moves are never in excess of 60 ft., as short as 20 ft. It is easy to understand what would happen if this 32-ft.-long component had to be moved around a vehicle to reach the side away from the feeding department. The position of the coaches not only keeps moves at a minimum, but the sides arrive in the correct position without turning or jockeying.

For placing the drive motors, which weight several hundred lbs. each, moves are kept within 20 ft. The rear of the coaches face the north side of the bay; motors enter here and are installed in the back end of the vehicle. This is a great time saver, and possible damage to these expensive components is minimized because of the short travel distance.

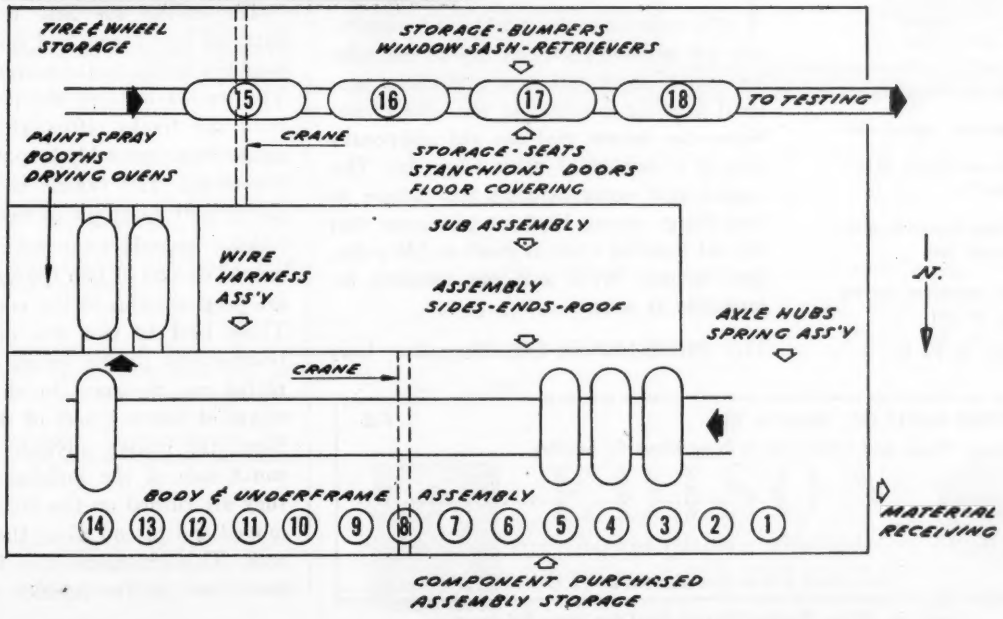
Another example is the spotting of the tops on the coaches. These are brought from sub-assembly, then picked up by the crane, which is equipped with a special lifting rig. It is felt that the crane operator can do a better job of positioning the tops when the coaches are placed laterally to the room, the same direction as the crane span.

The Castered Dollies

The dollies which carry the vehicles ride on inverted V-shaped tracks. These are made of structural angles welded to a flat plate

FINAL ASSEMBLY LINE is advanced one station each day. From front end coaches move to painting.

SIDEWAYS TRAVEL through 14 assembly stations. Flow of the subassemblies is indicated. Four other stations are located at the south wall.



The BELL Prime Mover

Bulky materials easily transported inside and outside the plant. Dozens of such jobs can be handled by the Prime-Mover.

Prime-Mover helps keep the plant clean. Bucket takes all kinds of scrap, large and small.

YOU CAN KEEP THINGS MOVING with the PRIME-MOVER!

Gear driven—no belts or chains

Engine protected against dirt

Turns in its own length, 63½"; width 31½"

Converts from bucket to platform without tools

Eight hours continuous running on 3 gal. of fuel

Bucket holds 10 cu. ft.

THIS versatile machine is doing a remarkable job in many plants. It can do the same for you. If some particular problem of material handling is bothering you—the Prime-Mover can answer that one and additionally help in a number of other ways, too. This rugged unit works outdoors and indoors to keep things moving. Here is a labor saver that has cut handling costs as much as $36 a day. Send coupon. We'll send you complete information at once.

THE PRIME-MOVER CO., Muscatine, Iowa

THE PRIME MOVER CO., Muscatine, Iowa F-8

Gentlemen: Please send information on Prime Mover for handling .....

Your Name.....

Company .....

City ..... State .....

Circle No. 32 on Reader Service Card for more information

which is fastened to the floor. The dollies are mounted on four swivel-type casters which are grooved to conform to the rail. The frame is made of 5-in. channels; caster supports of ½-in. plate. The load supporting member, which is the axle locating rack, is of ¾-in. bar steel. Notches in the dollies' carrying structure were designed to compensate for the change in wheelbase of the various sized models. Consequently, one size of dolly is applicable for all four models without any change in its structure. One such carrier is placed under each end of a coach.

The dollies also provide flexibility in manipulating the large assemblies in and out of paint booths and ovens and changing their direction for final operations. (Actually, the over-all line is U-shaped as shown in the accompanying sketch.) At the latter stations, the coaches are moved in the conventional end-to-end manner. After emerging from the ovens, the dollies leave the rails and travel on the floor. A change in direction is easily made because of the swivel type casters on which the dollies are mounted. This change of direction is an essential part of the flow plan and layout.

Assembly Flow

The dollies are first used for carrying wheel, axle and spring assemblies to the final assembly line. The loaded carriers are propelled onto the tracks, after which the under frame assembly is spotted by the crane. The vehicle is successively built up on the carriers.

After assembly, the vehicles are moved on one of two tracks which are perpendicular to the main one. These lead to two sets of paint booths and drying ovens. Floor plates are designed to shunt to either of the two sets of stations. Next, the models advance to the south side of the building where they are turned on the dollies and moved end to end along the south wall. This arrangement is feasible here since the few interior compo-

nents which are added may be fed from one side. Only four stations are located in this area. A second bridge crane which serves these stations lifts the vehicles from the dollies so the wheels, rims, tires and tubes can be added.

Company officials point out that the castered equipment is largely responsible for the benefits which are gained during the assembly of the coaches. Because the direction of travel can be changed when necessary, right-angle turns can be made to effect maximum use of the manufacturing area. They provide a great deal of flexibility of operations which is very important to the company because of the job-shop nature of its business. Production can be increased without any appreciable increase in existing facilities.

NEWS FROM THE SALES FIELD

R. J. CALLAHAN Engineering Co., 527 1-3 E. Washington Street, Springfield, Ill. has been appointed distributor of Service Caster & Truck Corp. for central Illinois. Service manufactures casters, floor trucks, lift trucks, portable elevators, Motowlift fork lift trucks and specially designed lifting and hauling units.

T. C. JOHNSON CO., 923 Midland Bldg., Cleveland: it has been appointed representative for Silent Hoist & Crane Co., Brooklyn, N. Y. The latter firm manufactures mobile swing-boom cranes, heavy-duty fork trucks and car pullers.

APPOINTMENT of James T. Metheny to its sales staff was announced by Jefferds and Moore, Inc., Charleston, W. Va. representative for the Automatic Transportation Co., Chicago. He succeeds James M. Arnett who resigned.

THE new address for Jim McCabe, material handling representative, is 301 Industries Bldg., New Orleans 12, La.

2 STEPS
to stepped-up handling

1. Use durable and dependable trucks. *Battery* trucks are a profitable investment: their electric drives start smoothly, have few wearing parts, use no explosive fuel, run without warm-ups or tune-ups. *They run with a minimum of down-time!*

★

2. Equip them with trouble-free batteries . . . the kind that take temperature extremes, jars, jolts and accidents as part of the day's routine. All of which is another way of saying: use EDISON Batteries. . . . The Standard of Comparison for the Industry.

★

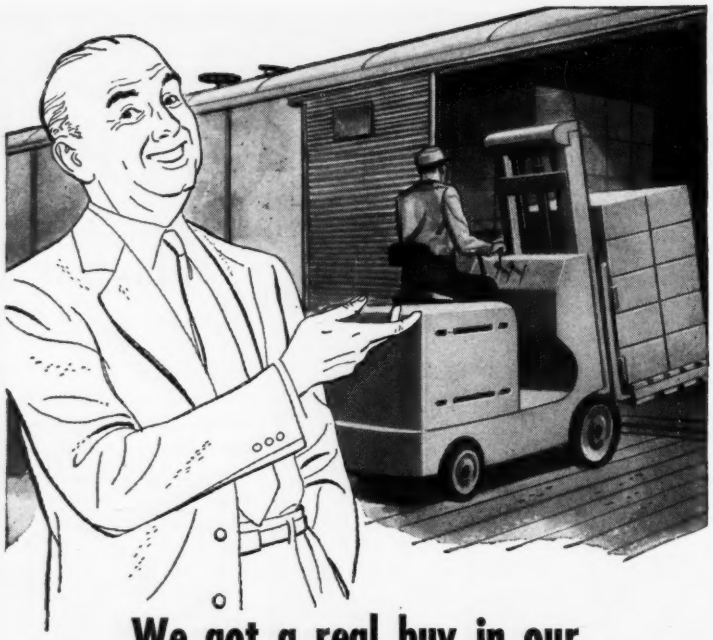
For this kind of duty, EDISON cells have no equal. They're built of steel inside and out, and their electrolyte preserves steel. They are not injured by accidental short-circuiting or reverse charging. Case histories show that many of them which have fallen off docks or down elevator shafts, or been in fires and floods, are still hard at work today!

For full information, write today for free booklet SB 2039 and a current price quotation. You'll find EDISONS cost little more than other makes of batteries . . . and they pay this back over and over in terms of low upkeep and long, long life. *Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey. In Canada, International Equipment Company, Ltd., Montreal and Toronto.*

EDISON
Nickel · Iron · Alkaline
STORAGE BATTERIES

Typical Truck Battery

Circle No. 33 on Reader Service Card for more information



We got a real buy in our BATTERY-ELECTRIC Trucks

"Just about a year ago, we decided something had to be done about our tough material-handling problems. We called in a Sales Engineer of one of the electric truck manufacturers for advice, and it wasn't long until we owned six new battery-electric trucks!

"Then things happened! We were able to cut our freight-unloading time 75%. In one of our departments we now handle material six times faster than we used to, and our cost-per-ton for handling all over the plant has been slashed! And do you know, our efficiency increase resulted in a lowering of the unit-cost of our product!

"Well, we could have done some of this with any industrial truck. But here's what we discovered with a battery-electric system.

"IT'S ECONOMICAL. Our operating costs run around 10¢ per hour per truck for everything—including repairs.

"IT'S DEPENDABLE. We have a very minimum of down-time with our trucks, and they're going strong 16 hours a day.

"IT'S SAFE. That electric truck-and-battery combination minimizes a fire hazard, and keeps our insurance rates down.

"IT'S FUME-FREE. Our men don't have to worry about operating in closed areas. Battery-electric trucks don't give off toxic fumes. No danger of product contamination.

"IT'S CLEAN. In our kind of business, cleanliness is important; and battery-electric trucks are *really* clean!

"IT'S A LONG-RANGE PROGRAM. Friend of mine told me his company has trucks in use that they've had for 22 years! And they're still good!

1928 1950

"Say, maybe you'd better look into *your* material-handling situation. I wouldn't be a bit surprised if you'd get the same satisfactory service and excellent results we did. Tell you what—write to The Electric Industrial Truck Association for their new 'Handbook of Material Handling with Industrial Trucks.' That'll give you plenty of information."

The Electric Industrial Truck Association

3701-C NORTH BROAD STREET • PHILADELPHIA 40, PENNSYLVANIA

Circle No. 34 on Reader Service Card for more information

BUILDING WITHOUT WALLS . . .

(Continued from page 25)

ing loads to storage was just as difficult and slow.

Tarpaper sheds contained one large pattern or patterns for a complete press only and were located along a rail spur so that a 10-ton locomotive crane could spot them near the shop. The sheds were torn down each time a pattern was removed. Highway trucks bringing the patterns from the main plant backed up to the door of the shop and the loads were lowered by a chain fall.

In moving small patterns to the foundry, manpower was the chief means of locomotion. Rough and often muddy ground was a complicating factor. The locomotive crane transported loads weighing more than one ton, which meant that it had to be pulled off regularly assigned duties, often for extensive periods of time.

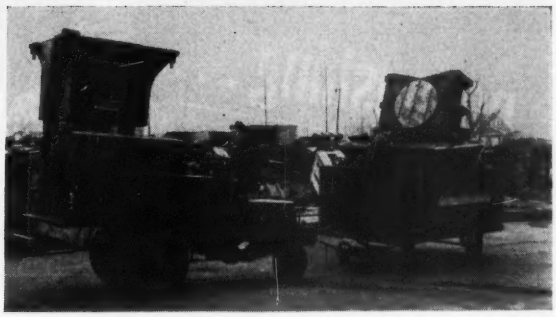
To reach a pattern in storage, it was often necessary to move many others. Due to crowded conditions, these had to be taken completely out into the yard before the desired stack could be reached. It often took a day and a half to remove a pattern from storage and transfer it to the shop, after which the other units had to be replaced. Returning patterns to storage was similarly difficult and time consuming.

Three-Point Program

In studies by company engineers a three-point program was developed. 1. Centralized storage facilities to consolidate various locations. 2. Rearrangement of patterns in storage so they could be more easily reached. 3. Handling tools that could be effectively adapted to the highly irregular loads.

Points one and two were carried out with the construction of a new 120′ x 300′ storage building whose sides and ends are open. It is adjacent to the old one. Handling operations were assigned to one 15,000-

SMALLER FORK TRUCK hauls loaded trailer and also carries lighter patterns on its forks.



NEWLY SURFACED YARD permits fullest utilization of rolling equipment like this tractor trailer.

lb. and one 2000-lb. capacity fork truck, an industrial type tractor equipped with a dump body and heavy-duty trailers. To obtain full utilization of the power rolling equipment, large sections of the yard and a road between the pattern shop and the foundry were surfaced with asphalt. Because of the irregular intervals at which many patterns are used and the distances which must be traveled, the fork trucks, tractor and trailers were decided on as the handling tools best suited for the requirements.

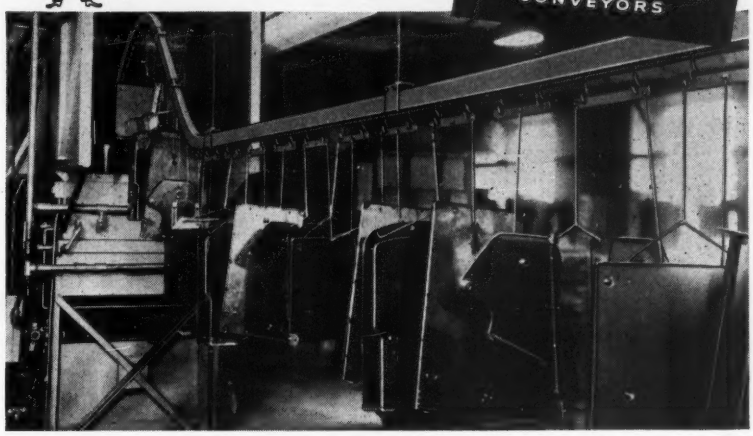
The new storage building is about 24 ft. high in the center (it has sloping roof), which permits higher stacking of patterns than was possible previously. Aisles and bays were lettered and numbered for stock control and selection. Because of the open sides and ends, loads from stacks at these locations can be drawn by the power trucks without entering the building. This was an objective of the planning. Such access to loads from the yard means fewer aisles inside and more space for storage.

Two 20-ft wide aisles inside the structure facilitate other stock selection. Although some stacks still block others, the fork trucks can, in a reasonably short time, remove the outer one to reach the desired load. Now it takes less than an hour to reach and transfer even the largest patterns. Two-by-fours and four-by-fours are used to separate loads and facilitate fork truck entry.

The older, smaller storage building was laid out for improved se-

Hang your headaches on "sky hooks"

✓ SPEED PRODUCTION AND BOOST PROFITS WITH Richards-Wilcox CONVEYORS



Stove parts entering degreaser on R-W ZIG-ZAG Continuous Power Conveyor.

Been wondering what to do about rising manufacturing costs? Even with plant personnel working at top speed, is your production rate still a problem? Your answer could easily be conveying equipment!

In today's highly competitive markets, plants with R-W Conveying Equipment are operating *more efficiently, more profitably.* Yours can, too!

R-W Conveyors Serve *All* Industry—Richards-Wilcox Conveyor Equipment is a major part of production and processing lines in every imaginable industry . . . increasing efficiency, cutting costs in the handling of light, medium and heavy materials. Why not have an R-W Consultant show you how conveyor equipment, engineered for your production requirements, can step up efficiency and boost profits. Just write or phone the nearest R-W branch office for free consultation—there's absolutely no obligation.

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"ZIG-ZAG" Continuous Power Conveyors — Unique powered chain conveyor with extreme flexibility. Designed especially for carrying light loads within confined areas—handles products through degreasers, dip tanks, spray booths, ovens, etc.

"LOCK-JOINT" Trolley Track OveR-Way Conveyors — Designed for handling light to medium loads, and maximum flexibility. Maximum capacity 3,000 lbs.

"TRU-TRED" Steel Beam OveR-Way Conveyors — For heavy duty handling and electric hoist service with minimum superstructure—eight different track sizes. Maximum capacity 8,000 lbs.

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SLIDING DOOR HANGERS & TRACK • FIRE DOORS & FIXTURES • GARAGE DOORS & EQUIPMENT
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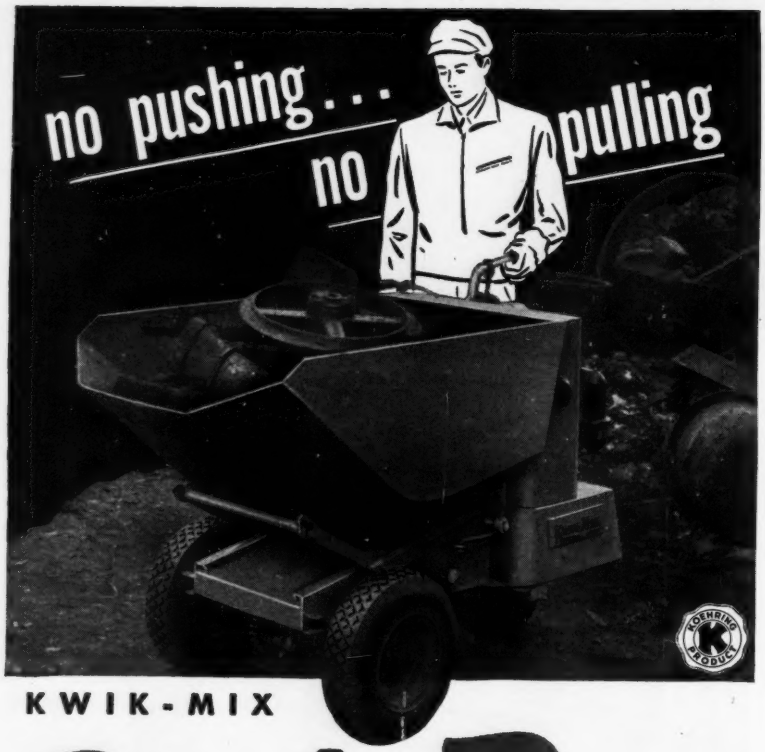


KWIK-MIX

Moto-Bug

has power forward and reverse

● This low-cost power wheelbarrow takes *all* the hard work out of hauling sand, coke, scrap, etc., because it has power both forward *and reverse* from 1½ to 4 m.p.h.

● Easily hauls 10 cu. ft. in big hopper, or carries 1200 lbs. on sturdy 4-ft. flat-bed. Result: bigger loads per trip, less operator fatigue, more loads per day.

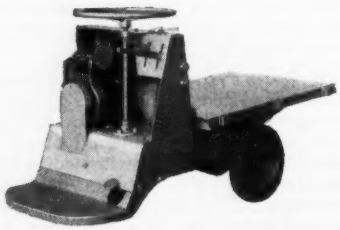
● *Standard-make*, 4 h.p., 4-cycle, gasoline engine takes full load up 20% ramps or grades. Handy 33" width clears narrow aisles and doorways . . . turns in own length.

● Moto-Bug has positive steering, direct to dual rear wheels. Large steering wheel with 3.6 to 1 gear ratio provides handling ease.

● Riding step, optional, plus positive steer arrangement, and forward and reverse power, let operator ride while traveling, spotting, and backing up.

● Dual steering wheels are standard equipment . . . dual drive wheels optional, for plenty of rubber-tired traction, flotation and handling ease on or off pavement.

● You'll find this job-proved Moto-Bug the lowest-cost answer in foundries, factories, around plant yards, etc. . . . makes man-hours 3 to 4 times more productive.



Send for complete Moto-Bug facts to: **KWIK-MIX CO., Port Washington, Wis.**

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FL KM26 REV.

KWIK-MIX COMPANY
PORT WASHINGTON, WIS.
(Koehring Subsidiary)

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lection of smaller patterns which it now houses. About two thirds of the patterns formerly stored in the main plant were moved out to the foundry. As needed, others will be brought up and put into stock after use, instead of being returned.

Gradually the sheds are being torn down and these patterns moved to the new storage building. This will free the locomotive crane for its more essential tasks, which include unloading incoming rail cars, transporting materials into the foundry, and spotting cars to be unloaded beneath the span of a bridge crane whose runway parallels the track on which the locomotive crane operates.

Better Production Control Apparent

A representative operation is as follows. After an order is received, a new pattern is made, or more often an old one drawn from stock. Small and medium size patterns are transferred from their storage location to the pattern shop by the 2000 lb. fork truck. It often hauls loaded trailers at the same time. In the shop, patterns are inspected or modified (as ordered). At this station the fork truck is often employed for turning over the patterns.

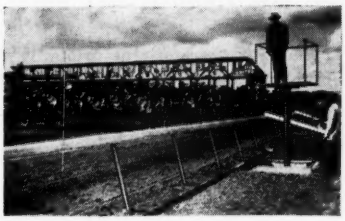
The larger truck has a motorized winch on the front of the body to secure patterns that extend over the ends of the tines which are five feet long. When the pattern is too large to get through the 10′ x 12′ door of the shop, the fork truck spots the pattern on the platform of a 120″ x 60″ trailer and it is transported inside.

Ordinarily, the tractor hauls small and medium size patterns to the foundry. Loads are carried both on trailers and on the dump body. Often the 2000-lb. fork truck spots the loads on the trailers. The 15,000-lb. fork truck transfers the larger patterns to the foundry.

No one is able to say as yet how much production will be increased through the use of the new handling equipment and the freeing of the

locomotive crane for its regular duties. (The program was only completed late last fall.) Already apparent is the improved employee morale. And the work can be scheduled on a closer basis.

THEY'RE OFF—Recent installation of two hydraulic-powered platform lifts at Florida's famed Hialeah race course now enables the official starter as well as the corps of press photographers to watch the races from a high vantage point. The official starter stands on the



rail-enclosed platform and operates the "outside elevator" to raise himself about nine ft. off the ground. The push button by which he controls the electric starting gate is mounted on the platform. A short distance away, another platform lift is used by the press photographers. A track safety rule prohibits the lensmen from stationing themselves on the track itself. The elevating press box is installed just outside the inner guard rail and provides a high camera angle for graphic race track pictures.—Courtesy, Globe Hoist Co.

AIDS AMBULANCE CREW—When a highway truck overturned in a traffic collision near the Minneapolis-Moline Power Implement Co. plant in Minneapolis, this fork truck was provided by the company as an aid in moving the

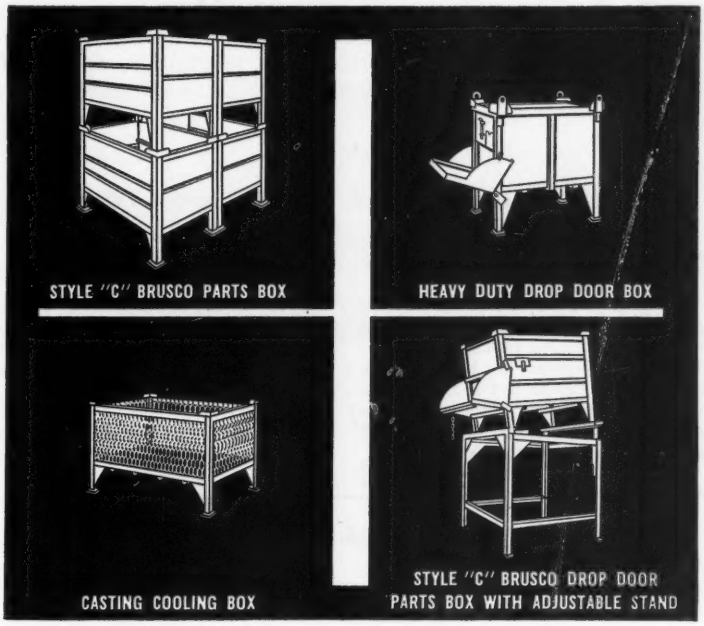
victim. After firemen had carefully lifted the injured driver through the upper door of his wrecked vehicle, and onto a stretcher, the fork truck gently lowered the litter to the ground.—Courtesy Clark Equipment Co.

IS YOUR PLANT

HANDLING PRODUCTION PARTS

WITH PEAK EFFICIENCY ?

Let **BRUSCO** show you how to hang on to parts handling dollars that you may be losing.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STYLE "C" BRUSCO DROP DOOR PARTS BOX WITH ADJUSTABLE STAND

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2. **BRUSCO** is engineered to work with every method of material handling.
3. **BRUSCO** is all steel, welded for strength and rigidity and fabricated with the correct gauge to meet your handling requirements.

Shown above are a few standard items of the **BRUSCO** Material Handling Line. These and many other units of **BRUSCO** equipment can be built to fit your particular handling conditions. *Write for full information. If you have a handling problem, let* **BRUSCO** *beat it.*

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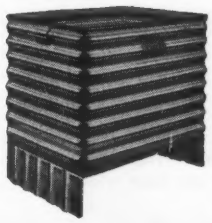
A standard parts box with 14 gauge corrugated steel body and 7½" underclearance, 26" wide; 36" long; 26" deep. Loads up to 3000 lbs. with 14 cu. ft. capacity. Tiering plates and/or crane lugs at slight additional cost. *Available in special sizes.*



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Brusco HANDLING EQUIPMENT

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The Useful, Versatile Load Conveyor . . .

Stitched Canvas Belting

Data for conveyor design engineers and belt conveyor users. This discussion covers factors relating to construction, physical properties and application of stitched canvas belting.

Part III. Conclusion—Tables Given On Major Factors

Physical Properties. Allowable Working Tensions

As mentioned earlier, the allowable working tension in a belt is somewhat in proportion to the ultimate strength of the duck and in direct proportion to the ultimate strength of the belt. (See Table I.) A safe figure is 10% of the ultimate strength.

Coefficient of Friction

It is rather difficult to obtain an absolute figure on coefficient of friction because of the variation in the surfaces of slider-beds under the conditions in actual use.

Table III has been developed over a large number of tests using speeds of 52 ft. per minute with a wood surface. These figures are useful primarily to show the **relative** coefficient of friction between the various belts listed.

"Belt Conveyors and Belt Elevators" by Frederic V. Hetzel, M.E., John Wiley & Sons, Inc., New York, N. Y.

Table I—Allowable Working Tensions

	Pounds Per Inch Per Ply Working Tension
Non-Guaranteed Spec. Belt Duck—32 oz.	31.0 Lb.
Guaranteed Spec. Belt Duck—32 oz.	32.5 Lb.
Guaranteed Spec. Belt Duck—37½ oz.	38.5 Lb.
Guaranteed Spec. Belt Duck—39 oz.	46.3 Lb.

Table II—Elongation And Ultimate Strength Of Stitched Canvas Vs. Solid Woven Belts

Pounds Per Inch Per Ply	Total Load Pounds	Per Cent Stretch in 6-1/4 Inches: Solid Woven 6" x 4-ply No. 1	Solid Woven 6" x 4-ply No. 2	Stitched Canvas 6" x 4-ply
25	600	8.4	7.3	1.9
50	1,200	11.3	10.1	2.7
75	1,800	12.6	12.3	3.4
100	2,400	14.3	13.6	4.3
125	3,000	15.6	14.8	5.1
150	3,600	17.0	16.4	5.8
175	4,200	18.2	17.3	6.9
200	4,800	18.7	18.2	7.6
225	5,400	Broke at 5330 lbs.	Broke at 5230 lbs.	8.9
250	6,000	----	----	9.5
275	6,600	----	----	10.8
300	7,200	----	----	Broke
Breaking strength in pounds per inch width per ply		222	218	330

Table III—Coefficient Of Friction

Sample	Starting Friction	Running Friction
Wax	.39	.252
Untreated Smooth Face	.40	.269
Untreated Regular	.382	.269
Abrasive Resistant	.643	.286
Cellulose	1.145	.520
Oil	.426	.260
Bituminous	.52	.40

Belt Weights

Table VII shows the weights of various types of finished belts ranging from 3-ply to 12-ply inclusive. This is especially necessary in calculating T_1 in elevator installations and will be found useful by the conveyor designer in many situations.

Coating Thicknesses

Table IV shows the standard thickness of principal coatings. In some cases these can be varied to suit the designer's requirements:

Table IV—Coating Thicknesses

Coating	Thickness-Inches
Abrasive Resistant	1/64 Each Side
Cellulose	1/32 Each Side
Incline Crepe	1/16
Incline Plastic	1/16 to 3/32
Incline Sponge	1/4

Ultimate Strengths

The ultimate strengths of various grades of beltings are shown in Table IX (page 60).

Solid Woven Vs. Stitched Canvas. Ultimate Strength and Elongation

Solid Woven cotton belting may often be used by the conveyor designer where loads are light and extreme flexi-

Table V—Recommended Pulley Lagging For Various Belts

Belt	Lagging: Recommend	Permissible	Avoid
Wax	Untreated	Wax	Oil and Rubber
Oil	Oil	Untreated	Bituminous, Wax & Rubber
Oil Buff	Untreated	Oil	Bituminous, Wax & Rubber
Bituminous	Bituminous	Untreated	Oil

bility is required. While this presentation is intended to give data primarily on stitched canvas belting, it is felt that the conveyor designer should have some guide as to the relative elongations and strengths of stitched canvas vs. solid woven. For this purpose we refer to independent test data which is taken from "Belt Conveyors and Belt Elevators" by Frederic V. Hetzel, M.E., John Wiley & Sons, Inc., New York, N.Y. Table III is taken from the above text (Chapter III, Page 53, Table 9). The figures in the column headed "Lbs. Per Inch, Per Ply" are a conversion of the pounds total load and were added for the convenience of the reader in comparing with other data in Table V.

"These tests were made in a 50,000 pound Riehle Machine. The movement of the jaws was not stopped from the time the machine started until the belt broke. The record of stretch was taken electrically at the increments of load indicated in the left column. Belt specimens were 18 inches long, 10 inches clear between jaws of machine."

From these data it can be concluded that at allowable working tensions these solid woven samples stretched four times as much as stitched canvas and stitched canvas had 36.4% greater ultimate strength than solid woven.

Pulley Lagging

Stitched canvas belting is a most desirable lagging material. In most cases a section of the belt itself can be used for lagging but where a special lagging is ordered it is normally used four plies thick. Regular stitching is sufficiently strong for most applications. For extremely heavy duty, short stitching can be specified.

Table V is a guide toward selecting the proper lagging.

Pulley Diameters

The pulley diameters best suited to a given ply belt at different speeds are given in the table below. For example, an 8-ply belt running 3000 feet per minute should never be run over a pulley less than 30", and to get the best service the pulley should be 36" in diameter.

Table VI—Diameter of Tripper Pulleys

Ply of Belt	Diameter of Tripper Pulleys	
	Minimum Advisable	Desirable Diameter
4	10 inches	12 inches
5	12 inches	15 inches
6	16 inches	20 inches
8	24 inches	30 inches

Selection of Belt. Number of Plies and Type of Duck

After the width and speed of the belt have been decided upon from considering the size of the pieces handled, the capacity required, etc., and T_1 (effective pull plus initial tension) has been determined, the next step should be to determine the number of plies and to select the grade of duck.

The ply of a conveyor belt is deter-

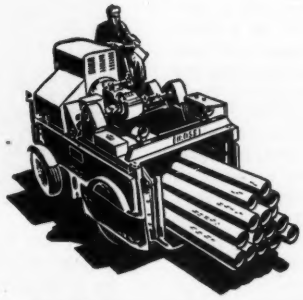
(Turn to page 60)

* At Mechanical Handling Systems, Inc. it's CONVEYOR ASSEMBLIES

. . . are a "CINCH" for ROSS Lift Trucks

Handling this heavy unwieldy conveyor assembly is typical of the jobs expected to be done by ROSS Lift Trucks. And such unusual tasks are routine for the versatile ROSS. That is why more and more plants look to ROSS for time-saving, cost-reducing big-load material handling.

Profit from the experience of others . . . make the ROSS Lift Truck a vital part of your material-handling system. There is a wide range of dependable gasoline-powered models to fit your plant's specific needs. Three types, nine models . . . capacities from 5,000 to 18,000 pounds. Consult ROSS . . . it will pay dividends.



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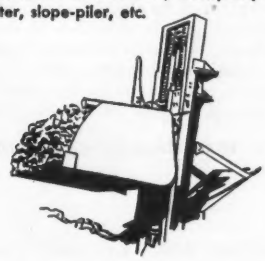

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Five types, capacities 10,000 to 30,000 pounds . . . cost-cutting team-mates of ROSS Big-Load Lift Trucks.

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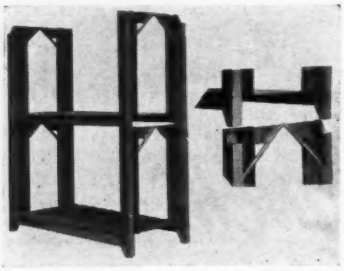
NEW PRODUCTS

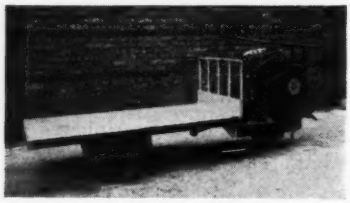
For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13, or use postcard bound into this issue.

AN ALL-STEEL WELDED STACKING RACK with safety interlocking features has been announced by Palmer-Shile Co. The rack is designed for stacking wire or similar materials where head room is a critical factor. Interlocking ends prevent shifting, keep tiered racks securely in place. Racks have all-steel welded construction, corrugated bottom and I-beam ends.



Circle No. 39 on Reader Service Card for more information

YARD-TRUCK CHASSIS FOR RAILROADS—The Prime Plug, a seven-horsepower, one-ton, self-contained power unit for utility service around railroad yards, shops and platforms, has been introduced by The Prime Manufacturing Co. It consists of a swiveling rear-driving power unit, steered and controlled by means of a tiller bar which encircles the driver. The power unit is connected by a single longitudinal frame member to a front axle and wheels. The body may be of any design and construction the purchaser desires to build, depending on the character of the loads to be hauled. The air-cooled, four-cycle engine is said to be capable of hauling a 2000 lb. load up a 20 per cent grade. Speed, controlled by foot throttle, ranges up to 10 miles per hour. Forward or reverse movement is controlled by slight downward or upward pressure on the steering tiller. In addition to dead-man control, a foot pedal actuates a positive braking arrangement on the front wheels. Additional braking action in either forward or reverse direction is available by slight application of engine power through raising or lowering the tiller.

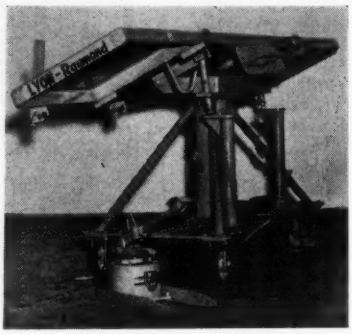


Circle No. 40 on Reader Service Card for more information

STACKING BOX—Bay Metal Products has developed a 10″ x 18″ x 6″ stacking box. It is available in 18 and 16 gauge. Features: reinforced corners, drop handle at each end, spotwelded construction, four rivets for extra strength, continuous stacking rim on all four sides.

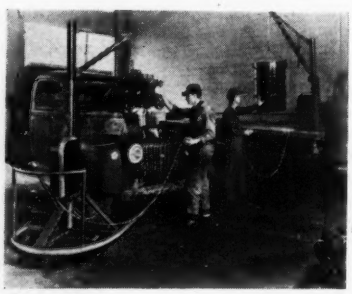
Circle No. 41 on Reader Service Card for more information

HYDRAULIC SHEET FEEDING TABLES with a self tilting top for use with inclined bed presses have been introduced by the LYON-Raymond Co. Sheets are loaded on the top when it is in a horizontal position. By manipulation of the pump and table supports, the top is hydraulically tilted to the desired angle. When the proper degree of tilt has been fixed, the table can be elevated or lowered, as required, to keep stock at the correct height for feeding to the press. Adjustable stops are provided on one side of the table to keep the entire pile of sheets even for accurate feeding. The tilting arrangement is available as an optional feature on 2000, 4000 and 6000-lb. capacity tables.



Circle No. 42 on Reader Service Card for more information

PORTABLE ELECTRIC HOIST—The Lift-All, an electric hoist designed for one-man operation, is a product of LIFT-ALL Equipment Co. It will hoist, lower, stop and hold weights up to 2000 lb. The unit operates on its own shop dolly, or from any desired position on a truck bed and can be quickly shifted from one mount to another by one person. Using push-button control, the operator is free to move about for load guidance. The boom, easily adjustable for height, swings completely around with its load. It is powered by a specially-designed six-volt reversible motor; a six-volt car battery is used on the dolly, and the truck battery supplies power when the hoist is truck-mounted. The dolly can swing around in its own length, and is wide enough to straddle obstructions and bring the mast close to the job. On its dolly, the hoist can lift from either side without tipping.



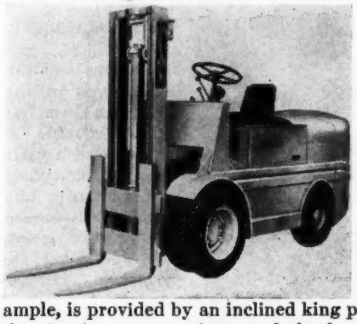
Circle No. 43 on Reader Service Card for more information

DUMPING BUCKETS—Blaw-Knox Co. has announced the re-design of its line of tip-over and self-righting dumping

buckets. They have all-welded design and are furnished in standard weights for use in handling foundry sand, ashes, brickbats, refuse, etc. The company is also making them available in heavyweight sizes for handling ore, crop ends, and for heavy industrial uses. Shown in use in the illustration is one of the buckets, a size D-27, with a capacity of 27 cu. ft. and weighing 760 lb.

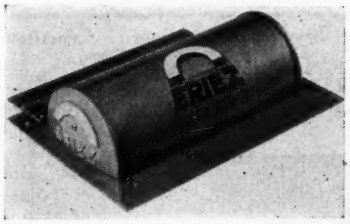
Circle No. 44 on Reader Service Card for more information

A PNEUMATIC-TIRED FORK LIFT GAS TRUCK for use over rough uneven terrain at the plant has been announced by the Philadelphia Division of The Yale & Towne Mfg. Co. Named the "Yard King," it is designed for use in building-supply yards, construction projects, airports, freight docks, and other outside storage and shipping areas. Easy steering, for example, is provided by an inclined king pin which also protects the steering gear against road shock caused by uneven terrain. The vehicles have oversized pneumatic tires. Cadmium plating on all undercarriage operating and steering connections are said to reduce damage from atmospheric rust and corrosion. An extra-large radiator and cooling system help prevent overheating; an unusually low center of gravity provides great stability, it is further claimed. Other engineering features of the truck include easy-to-operate automotive type controls; fully articulated rear axles; a hypoid (automotive design) drive at the rear axle, and an hydraulically operated lift and tilt. The frame of the truck is of all-welded construction particularly adaptable for heavy yard work. The "Yard King" tilting fork truck is available in four sizes that have maximum load lifting capacities ranging from 4000 to 8000 lb. Stacking heights are available up to 124 ins.



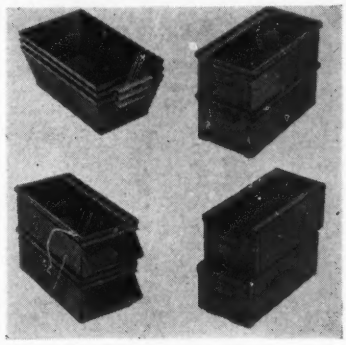
Circle No. 45 on Reader Service Card for more information

ATOMAGNET—Eriez Mfg. Co., has introduced a line of non-electric plate magnets for separation of tramp iron from materials in process. Known as Atomagnets, they come in three models, each with a different magnetic strength; each also comes in a full range of sizes. The magnet castings are fully encased with a formed cover. This increases longitudinal stiffness and prevents tampering and accumulation of iron on the backs of castings with consequent formation of auxiliary magnetic poles that detract from the efficiency of the normal magnetic field. Parts are riveted for added structural strength. The hinges on standard models are made of aluminum, continuous and offset. Insulation of the plate's working surface confines magnetic strength to where it is desired. It is further claimed that a flush air gap on the plate face prevents gathering of fine iron in this crucial location. Installations can be made on chutes, hoppers, spouts, etc.; over inspection tables, moving belt lines; in operating or original equipment.



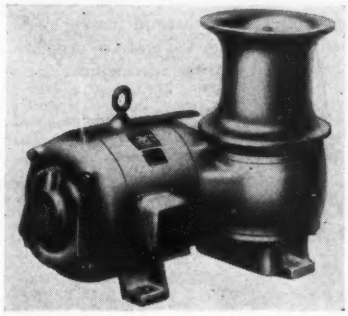
Circle No. 46 on Reader Service Card for more information

STEEL SHOP BOXES—The Union Metal Mfg Co. has developed a new line of steel shop boxes. They are built in a wide range of standard sizes, types and combinations suitable for most normal small-part handling requirements; special shop boxes are also available. Boxes have full length bottom runners; one-piece bottom and end construction; double reinforced corners; elimination of end offsets to simplify material removal.



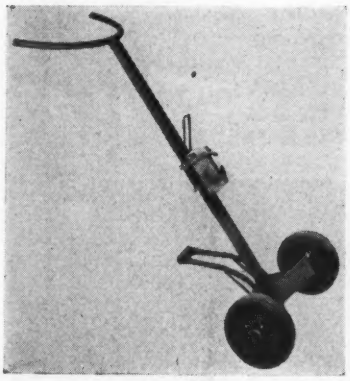
Circle No. 47 on Reader Service Card for more information

AN ELECTRIC CAR PULLER has been announced by the King Manufacturing Corp. These units are available in five sizes, from 2 to 10 horsepower and from 1500 to 6250 lbs. line pull. Loaded freight cars at level grades are moved 40 to 48 ft. per minute. Anti-friction bearings are used throughout. Spools are 5" diameter on 2 horsepower unit, and 6" diameter on other models. Car pullers can be mounted vertically (as shown) or horizontally, such as on the side of a building. All models have 220-440 volt, 3 phase, 60 cycle motors. Motors with other current characteristics are available. Construction throughout permits outdoor use the year around.



Circle No. 48 on Reader Service Card for more information

DRUM TRUCK—Marvel Industries has introduced a truck, the "LIFTOMATIC", for handling drums, fibre or steel, or any container with a bead, rim, or chime, regardless of the size of the rim. The container is held and carried by two jaws which close on the upper rim. The jaws close and open automatically on the rim without any damage to drum or bead. The jaw housing is quickly and easily adjustable anywhere on the mainpost, allowing containers from 7 to 44 ins. in height to be transported.



Because the outside dimensions of the wheel base are less than the diameter of the average drum, the operator can place the drum in any exact location

Circle No. 49 on Reader Service Card for more information

Bond
STRUCTURAL STEEL
CASTERS

Companions in Strength
for easy, efficient movement of materials

40-A Series — Double Ball Race Structural Steel Swivel Caster.

41-A Series—Structural Steel Rigid Caster.

140-AH Series—Heavy Duty Double Ball Race Structural Steel Swivel Caster.

140-A-HVG Series—V-Grooved Wheel Double Ball Race Structural Steel Swivel Caster.

Bond Structural Steel Casters are available with Plain or Roller Bearing Wheels of Semi-Steel, Solid Rubber and Vulcanized-on Rubber Tread. Thread Guard types also available.

THESE Bond *built-for-the-job* casters are all members of one family of structural steel casters. Each of the three series of swivel casters has a double ball race designed for easy turning and for equal distribution of the load. All four series are built to withstand heavy loads and sudden shocks, and are pressure lubricated for long service life.

Bond Catalog K-38 fully describes these and other Bond Truck Casters. We will be glad to send you a copy on request.

BOND FOUNDRY & MACHINE COMPANY
310 PENN ST., MANHEIM, PA.

CESCO DUMPER HANDLES BAGS, DRUMS AND BULK

MULTI-PURPOSE DUMPERS for dumping bags, bulk or drums, as well as single-purpose types save handling time and reduce accidents. Dumping heights range from 5 to 12 ft. Special sizes made on order. Have lifting capacity of 500 lbs.; handle up to 100 loads per hr. ½ H.P. motor controlled by push button. Immediate delivery. Write for 8-page catalog.

COLSON EQUIPMENT & SUPPLY CO.
1321 WILLOW STREET • LOS ANGELES 13, CALIFORNIA

Circle No. 50 on Reader Service Card for more information

without any manual handling. It is further claimed that the drum can be placed in or removed from the center line of a line of drums without moving adjacent drums. The truck weighs 40 lb. and can handle loads up to 1000 lbs. It is of welded construction, and is furnished with full roller bearing wheels, mounted with 10 x 2.50 solid rubber tires, or 8 x 2.50 cushion tires, if desired.

Circle No. 51 on Reader Service Card for more information

ADJUSTABLE ROLLER CONVEYORS—designed for conveying around corners have been introduced by the Berlin Chapman Co., and will be known under the name Flex-co. They are made in 12", 18", 24" and 36" widths and can be installed in any combination of radii. Portable as well as adjustable and flexible, they may be easily and quickly moved around the plant. For additional information, mail the postcard.

Circle No. 52 on Reader Service Card for more information

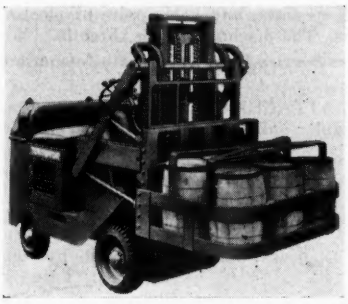
NOW available to industry is a reference book, published by the Material Handling Institute, Inc., which is appropriately titled "Modern Method Of Materials Handling." It contains 150 case histories which are pictured with more than 500 illustrations. The ideas are presented in simple, straightforward manner so that they can be adapted easily to your own plant operations. All methods have been tested for cost-reducing effectiveness; the use of flow charts is shown; typical plant layouts are diagrammed along with descriptions of equipment. You may order the book from FLOW Magazine, or request a copy for free examination, which may be held for 10 days. "Modern Methods Of Materials Handling" has been prepared as an authoritative reference manual for the plant manager, engineer and others responsible for material handling. $5.50 per copy.

Circle No. 53 on Reader Service Card for more information

PORTABLE COIL RACKS, manufactured by Equipment Manufacturing, Inc., have nesting caps welded on the tops or bottoms of the upright members to permit easy, safe stacking to any height. These caps are the self-centering type so that the racks can be readily placed in position by the lift truck. Reinforced, open-end design of the racks also eliminates the need of a cross member at the top of the uprights. It is also stated that this feature permits lifting the coils out of the racks as a unit with either crane hook or lift truck ram.

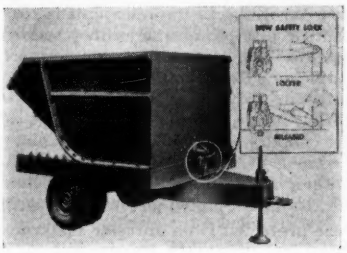
Circle No. 54 on Reader Service Card for more information

THIS HYDRAULIC KEG HANDLING DEVICE developed by the Towmotor Corp., picks up, transports, stacks and unloads six 200-lb. kegs in a single maneuver. To pick up a load, a guide frame mounted on the accessory with 10" stroke is lowered over the kegs. As the unloader is retracted the guide frame pulls the kegs against three rubber - covered shoes which project from the face of the carriage. Both shoes and the guide frame are easily detachable, so that the trucks can be used with standard forks.



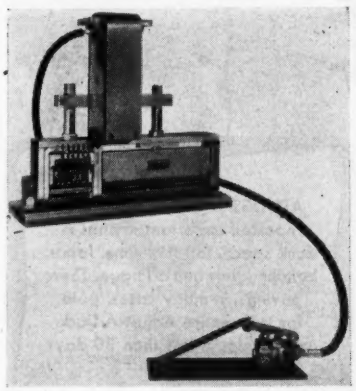
Circle No. 55 on Reader Service Card for more information

DUMP TRAILER—The Super "Phil-Dump" Trailer is designed for heavy-duty moving and dumping of all types of industrial materials. It has been developed by Phillips Mine and Mill Supply Co. Designated Model DP-3B, it has a three-cu. yd. self-dumping hopper, with a safety lock which provides positive locking and prevents accidental dumping of load. Made from heavy gauge steel, this trailer has a delicately balanced hopper which automatically dumps when the lock is released. After the load has been dumped, the hopper is automatically locked in place when it returns to loading position. Structural features: jack stand for accurate leveling; structural reinforcements with rolled edges to prevent injury to personnel and possible tearing of load; sturdy steel hopper and frame which ride on dual pneumatic tires which are mounted underneath the frame to provide a minimum overall width. The trailer is pulled and maneuvered by an industrial tractor.



Circle No. 56 on Reader Service Card for more information

PLATFORM NUMBERING & IMPRINTING MACHINE —Wm. A. Force & Co., Inc., has developed a machine for numbering and coding, dating or other marking in one operation. One-half-in., ¾" or 1" rubber figures in the numbering unit can be set to operate in consecutive, duplicate or repeat actions. This assembly is designed to mark product name, manufacturing date, and production control number on heavy kraft paper bags. The device is hand-fed and operated by compressed air with foot treadle control. Marking, dating and coding characters are interchangeable rubber type to facilitate quick changes when necessary.



Circle No. 57 on Reader Service Card for more information

Circle No. 58 on Reader Service Card for more information

Handle parts and materials faster, *and save space* with Donaldson's versatile TIER TRUCK. REDUCE HANDLING . . . roll parts right next to production machinery or assembly line . . . move them directly from tiered storage to next production operation. Self-aligning baskets . . . stack neatly and quickly to any practical height. Sturdy angle frame. Expanded metal basket permits clear view of contents. Two fixed and one swiveling caster for maneuverability.

WRITE FOR LITERATURE

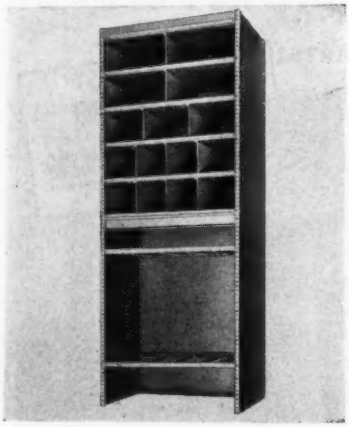
DONALDSON COMPANY Inc.

666 Pelham Blvd. St. Paul 4, Minnesota

ELECTROLIFT
saves handling costs because it uses little power, requires less labor and does the job quickly. Many users report this worm-drive electric hoist saves them more than enough money to pay for its installation. There's an ElectroLift model to meet your capacity (up to 6 tons), speed and plant layout needs. Write or phone your nearest ElectroLift representative — listed in the classified directory — or:
ELECTROLIFT, INC., 30 Church Street, New York 7, N. Y.

Circle No. 59 on Reader Service Card for more information

A SHELVING UNIT designed specifically for storage of long, awkward parts has been developed by the automotive shelving department of the Berger Manufacturing Division, Republic Steel Corp. Known as No. 1428, it saves expensive floor space and eliminates cluttered aisles since it stores long parts in a vertical position between dividers which are easily adjusted to meet the requirements of various sizes and types of parts. The long parts section measures 36" wide, 48" high and 24" deep. Overall size is 36" x 96" x 24". The cross bars which hold divider bars are adjustable up and down on 1" centers; the front to rear divider bars are adjustable across on 2" centers. Additional bars may be added to the long parts section as the shelves and dividers in the lower part of the unit are also easily adjusted. A bin front is provided for the large open section.

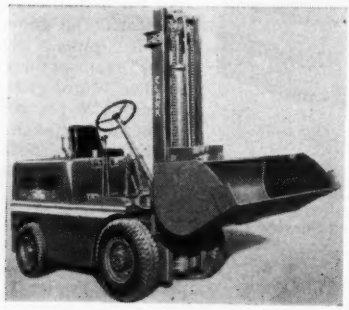


Circle No. 60 on Reader Service Card for more information

MODEL T-5, A TRIGGER-ACTION TACKER for driving staples into wood and other material is manufactured by Bostitch. Especially adapted to work in restricted places where there is not room enough to swing a hammer, it places and drives the staple exactly where it is wanted, without danger of marring the material. Its short, narrow base gets into small places and it drives the staple within 1/16" of inside corners, rabbets, moldings, etc. Three models of this machine, use light, medium, and heavy wire staples of several different lengths. The machine weighs three lb.

Circle No. 61 on Reader Service Card for more information

A SCOOP SHOVEL ATTACHMENT for fork-lift trucks, designed for full hydraulic operation through the cycle of picking up a load, tilting back for carrying, dumping and return to scooping position, has been announced by the Industrial Truck Division of Clark Equipment Co. The shovel is designed to handle small stampings, scrap steel, small castings, sand, gravel, stoker coal, grain ashes, fertilizer, salt, wet mixed concrete and other similar materials which will fall through a 2½-in. screen. According to the release, it is easy to install and detach, and is interchangeable with standard forks and other attachments. Self-sealing hose couplers are part of the standard equipment. The device is pivoted on two cantilevers that extend from a fixed steel plate secured to a truck's fork bars by fork guides at the top, and clamps at the bottom. A hydraulic cylinder, controlled by an auxiliary valve, tilts the shovel from a carrying position 30 degrees above horizontal to a dumping position 45 degrees below with uprights vertical. A chromium-plated piston rod is used, and the cylinder walls are protected from abrasive materials



TRIPLE DOCK CAPACITIES with LESS LABOR!

RUGGED HYDRAULIC SYSTEM. Push button control of the motor-operated hydraulic system quickly brings the floating dock to truck bed level where rounded steel arms float the dock at truck level.

AUTOMATICALLY SAFE. Limit switch automatic control prevents even a loaded Adjust-A-Dock from dropping if truck should move away. When not in use, Adjust-A-Docks are leveled with dock floor and sustain loads up to 400 pounds per square foot.

EASILY INSTALLED. Adjust-A-Dock installations, designed to withstand weather, are made completely above ground and have a 100% salvage value in event they are moved.

ADJUST-A-DOCK users have reported important savings in dock space, loading time, labor, handling time and damage. These savings, in many cases, paid for their entire Adjust-A-Dock installations in less than 30 days.

ROWE METHODS, INC. 1741 EAST 25th STREET CLEVELAND 14, OHIO

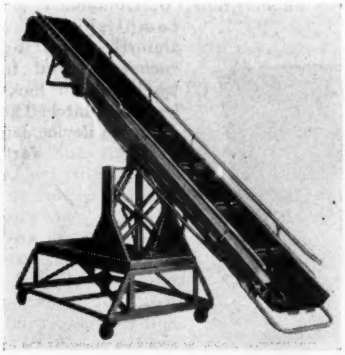
WRITE FOR COMPLETE INFORMATION ON ALL MODELS NO OBLIGATION, OF COURSE.

Circle No. 62 on Reader Service Card for more information

by a wiper in the cap. The shovel may be obtained in widths of 38 inches to 72 inches; capacities range from 8 cubic feet to 15 cubic feet.

Circle No. 63 on Reader Service Card for more information

A CLEATED RAPID POWER BOOSTER—engineered for power stacking and boosting in limited space, has been announced by The Rapids - Standard Co., Inc. This unit moves bags, cartons, crates and many other materials at inclines up to 45 degrees, and can be easily rolled from one job to the next. It is manufactured in 12, 16, and 20-ft. lengths and 12, 16 and 20-in. belt widths for handling a wide variety of goods. It has a box-channel bed of 10-gauge steel, securely cross-braced and trussed to prevent deflection under heavy loads. The bed is raised and lowered with a hydraulic lift, and degree of incline is controlled by double screws operated by a hand wheel for exact positioning. The entire unit is mounted on a sturdy channel-frame steel base fitted with four 6-in. swivel casters and either plastic or nicro-steel wheels. A full-length control bar, operated from either end of the belt, controls the on-off and belt-reverse motor switches. Welded steel drive and take-up pulleys are equipped with sealed, self-aligning ball bearings for long-lived service. The canvas-covered wood cleats are securely bolted to the belt, preventing tearing.

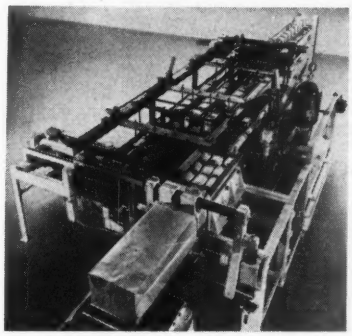


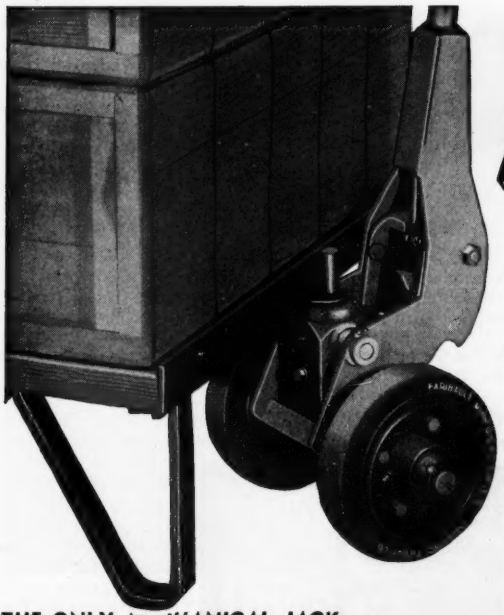
Circle No. 64 on Reader Service Card for more information

FOUNDRY SHAKEOUT—The Link-Belt Co. has developed a line of heavy-duty "CA" foundry shakeouts. They are available with capacities ranging from 8000 to 30,000 lb. and up. The shakeouts are said to permit continuous straightline operation; make possible dust control; hasten reduction of sand lumps and temperatures for quicker recovery of sand; eliminate flask damage; simplify reclamation of reinforcing rods, gaggers and sprues. The vibrating deck is accessible from all four sides. There are no projecting parts. Decks on non-discharging types are set horizontal. On discharging types they are sloped so that castings move to discharge end by the combined action of gravity pull and vibratory motion.

Circle No. 65 on Reader Service Card for more information

WITH ITS AUTOMATIC PACKER up to 180 consumer units can be compression packed into shipping containers every minute using one operator, according to a release from the Union Bag & Paper Corp. Cycling at a top speed of 15 shipping containers a minute, the production of two or three packing machines can be fed into this machine direct from the packing lines. One to 25 lb. packages can be handled with only a slight mechanical adjustment of the machine. Moreover, interchangeable duckbills make it possible to package rectilinear cartons or round cornered bags. The machine is designed for packing rice,





Nutting JACK AND LIVE SKIDS

FOR FLEXIBLE LOW COST MATERIALS HANDLING

Only the Nutting Jack is operated by gravity and leverage—no springs to break!—no danger of your jack-skid system suddenly bogging down. The Nutting Jack is unique in its simple, rugged construction, and has many other advantages: complete control of load at all times, easy swiveling under full load, extreme range of tongue positions for short turns, extra high lift for steep ramps or high thresho'ds without striking skid legs.

Nutting Live Skids are sturdily built to Nutting Standards of quality. They take the grief year after year! A large range of standard platform sizes, with superstructures available if desired. The Nutting Jack-Skid System is outstanding—investigate!—compare!

Nutting Makes Everything in FLOOR TRUCKS, WHEELS, CASTERS.

Look in your classified phone directory for your nearest Nutting representative, or write for Bulletin 48-JS direct to

THE ONLY MECHANICAL JACK WITH NO SPRINGS

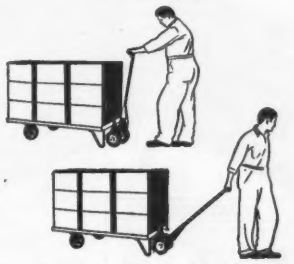


FIG. 421, Standard Industrial Skid, 9 platform sizes from 24" x 48" to 42" x 72." Capacity 1800 lbs. Metal or Rubber Tired Wheels.

our 59th Year NUTTING TRUCK and CASTER COMPANY

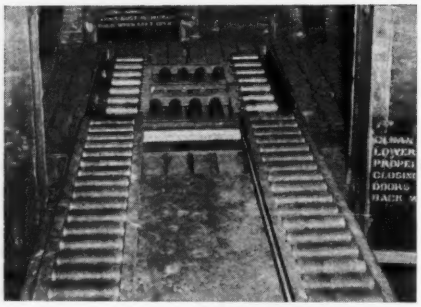
1604 DIVISION STREET, FARIBAULT, MINNESOTA

FIG. 420, Heavy Duty Industrial Skid, 9 platform sizes as above. Welded angle steel frame. Capacity 2800 lbs. Metal or Rubber Tired Wheels.

Circle No. 66 on Reader Service Card for more information

Circle No. 67 on Reader Service Card for more information

TROUBLED WITH PALLET HANDLING?



IF SO HERE IS YOUR ANSWER

Ultimate PALLET DOLLIES & PALLET GRAVITY CONVEYOR

The Pallet Dolly takes over in Pallet Handling where the Fork Truck ends (at freightcar door). Let us show you how the Pallet Dolly can help.

See us in Booth 403 at the Western Packaging & Material Handling Exposition, August 16th to 18th in San Francisco

Write now for Bulletin RTD-1A

ISLAND EQUIPMENT CORP.

27-01 Bridge Plaza No. Long Island City 1, N. Y.

FOR MORE EFFICIENT *Car and Truck* LOADING

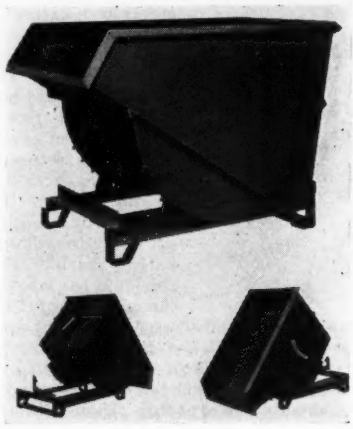
Wm. Christensen Co., Inc.
Dept. F1. York, Penna.

Circle No. 68 on Reader Service Card for more information

sugar, flour, salt, beans, peas, fertilizer, soap powder, dog food, and many others.

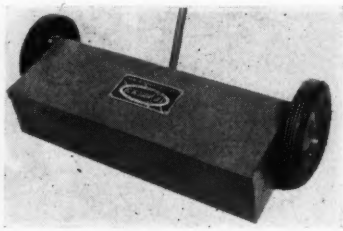
Circle No. 69 on Reader Service Card for more information

AN AUTOMATIC END DUMP for use with lift trucks is being manufactured by Palmer-Shile Co. Dumping is accomplished by a smooth-operating rocker geared to track which locks by safety latch. The dumping device can be built for fork and other lift trucks and with casters for moving around machinery and through narrow aisles. It may be used for handling and dumping sand, castings, scrap, stampings and other heavy materials. All-welded construction. Built of heavy steel plate reinforced with heavy angles.



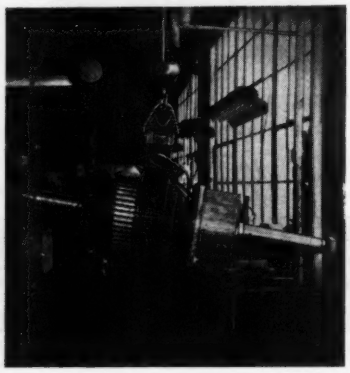
Circle No. 70 on Reader Service Card for more information

PERMANENT MAGNET FERROUS CLEAN UP UNIT —A new permanent magnet clean-up unit designed for use in lumber yards, garages, upholstery shops, machine shops and any hard-surfaced area from floors or alley-ways, has been announced by F. W. Shrader Co. It comes in two models, one 24 ins. wide and the other 36 ins. in width. Both are suitable for use on smooth or reasonably uneven surfaces. A special feature is the lever-operated clean off, by means of which the load may be dropped with a simple flip of the handle.



Circle No. 71 on Reader Service Card for more information

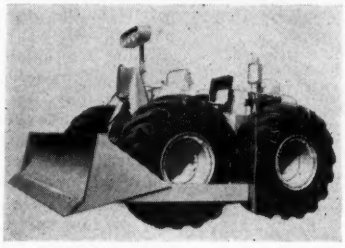
WOVEN WIRE SLING—The Cambridge Wire Cloth Co. has announced that its line of woven wire slings is now available in standard widths of 3" to 30" and from 36" to 132" standard lengths. They are constructed from an adaptation of a basic mesh used in the fabrication of woven wire conveyor belts and are available in any metal or alloy, including stainless steels. These slings are in use for handling of heat exchanger tube bundles, rod and bar stock, and pipe and cylindrical tanks.



Special tempered steel handles, attached to both ends of the sling itself, permit use of either a choke or basket hitch around the material being handled. They provide gripping power because of the width of the fabric and because the cross rod construction permits the sling to bend around an extremely small radius. It is further stated that they do not kink or tangle.

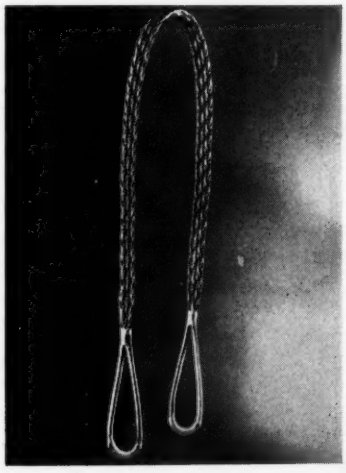
Circle No. 72 on Reader Service Card for more information

FOUR-WHEEL TRACTOR DOZER—To meet the need for a speedy, rubber-tired, four-wheel tractor dozer to handle jobs which do not demand the use of the larger, standard size Tournadozer, R. G. LeTourneau, Inc., has introduced the smaller size Model Super D Tournadozer. It is powered by a 122 h.p. diesel engine; capacity of the bowl is 1.8 yds. This model has four speeds forward up to 19 m.p.h., with two reverse speeds. It is mounted on rubber tires available in two sizes—21x25 or 56″ wide base rim. These tires permit operation in soft going at reduced air pressures. The dozer is equipped with air-synchronized, multiple-disc clutches. Steering is accomplished by controlling wheels on each side through the use of air-actuated multiple-disc clutches and brakes. The bowl is cable-controlled and is operated through an electric motor and gear reduction box.



Circle No. 73 on Reader Service Card for more information

FLAT-BRAIDED WIRE ROPE SLING—This sling was designed to provide a relatively wide, flat bearing surface with the sling thickness held to a minimum. It is called Macwhyte DREW 14-Part, Type 1 CT, flat-braided wire rope sling. It is made by the Macwhyte Co. Being made from an endless wire rope, the sling ends terminate in natural loops which are fitted with thimbles. It was designed for a particular lifting operation requiring a sling with a maximum body width and minimum thickness in addition to light weight and flexibility. The sling is used in a basket hitch, encircling the load and the two loop eyes on the crane hook.



Circle No. 74 on Reader Service Card for more information

INDUSTRIAL CUSHION TIRE—A new cushion tire for industrial trucks has been developed by the Monarch Rubber Co. The company states that the tire will cut maintenance costs on lift trucks and other industrial vehicles, as well as contribute to easier steering, less load breakage and reduced

Circle No. 75 on Reader Service Card for more information

N & F BINS REDUCE HANDLING COST

This photograph shows a group of Neff & Fry Bins used in a coal handling operation. The coal is dumped into a pit, elevated to the bins, withdrawn by gravity. Manual labor is virtually eliminated. What's more, the material is kept off the ground and out of the weather.

N & F Bins, built of Super-Concrete Staves with encircling steel rods, have the stamina to withstand maximum stresses. The staves are formed under great hydraulic pressure, giving them rocklike density and high compression strength. Heavy superstructures are mounted upon the bins without extra supports.

Thousands of N & F Bins have remained intact for decades, used for handling and storing many kinds of flowable bulk materials—coal, grain, seeds, peanuts, minerals, chemicals, sand, wood chips, clay, etc.

Don't decide upon storage facilities before getting all the facts about N & F Super-Concrete Stave Bins. Ask for a copy of our catalog containing full information and numerous photographs of installations.

THE NEFF & FRY COMPANY
151 EAST CENTRAL AVENUE, CAMDEN, OHIO

NEFF & FRY STORAGE BINS

WILCO OAK PALLETS
ARE THOROUGHLY INSPECTED TO INSURE TOP QUALITY

COL. WILCO gets a physical examination

WILLIFORD MFG. CO.
Box 6095-F, Buntyn Station
MEMPHIS 11, TENNESSEE

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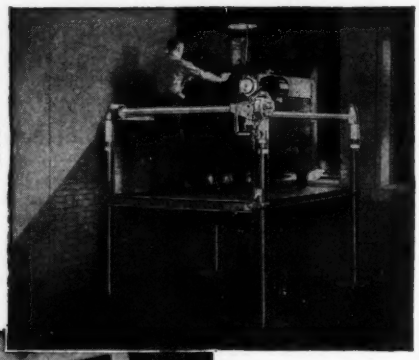
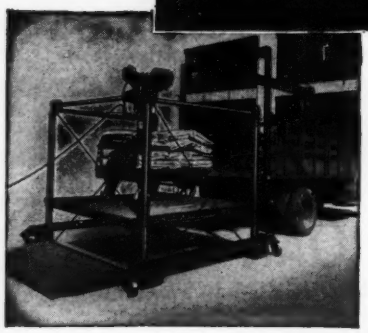


Simplifies movement of factory trucks between two floor levels



Portable model at additional cost—can be moved to facilitate loading and unloading of trucks in factory yard, etc.

Save your workers a lot of backaches—save time, trouble and money, by handling heavy loads from level to level with the new Service LEVELER. Dependably powered by a ruugged, fully-enclosed, 1 H.P. motor, it lifts as much as 6,000 pounds as high as 5 feet . . . in less than a minute. Loads, machine and operator are fully protected under all operating conditions. Outstanding safety features include: easy manual control of starting and stopping at any height; automatic top and bottom limit stops; positive motor cut-off stops; centrifugal safety governor; slack cable shut-off; post guard rings. Here's a unit that can be installed anywhere in just a few hours at amazing low cost . . . requires no sub-surface installation . . . obsoletes slow, dangerous manual handling . . . pays for itself in a very short time. *Write for detailed specifications today.*

Cost-Saving Service Materials Handling Products

Motowlift Gas-Powered Hydraulic Lift Truck | Service Hand Lifter | Service Liftable | Service Electric Hydraulic Lifter | Service Hydraulic Leverlift | Service Leveler

SERVICE CASTER & TRUCK CORP.

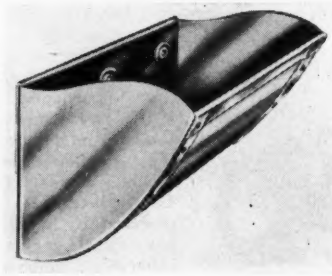
Executive Offices: Albion, Michigan
Plants at Albion, Michigan and Somerville 43, Mass.
SEE YOUR CLASSIFIED TELEPHONE DIRECTORY FOR NEAREST DISTRIBUTOR

Circle No. 77 on Reader Service Card for more information

floor wear. Known as the Mono-Cushion, the tires are said to incorporate improved wearing qualities and better shock absorption characteristics.

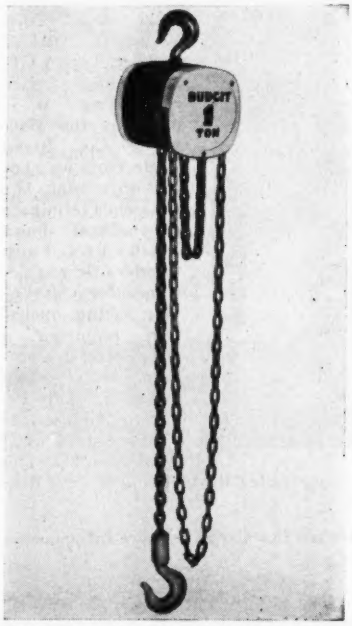
Circle No. 78 on Reader Service Card for more information

ELEVATOR BUCKETS—The manufacture of the "Hi-Cap" line of high speed elevator buckets has been announced by the Fort Worth Steel and Machinery Co. Although intended for use primarily in the grain industry, they are suitable for handling any powdered or granular free flowing material which is not excessively abrasive. They are operated at either high, medium, or low speeds and are suitable for either replacement purposes or new installations in chain or belt elevators. They are made from heavy-gauge cold-rolled steel. Durability and long life are assured by a rolled front lip of double thickness. The ends of the buckets are formed to support the body of the bucket. Ends and body are spot welded so as to remove all shear stress from the welds. Tapered ends are said to decrease friction on pickup and discharge and allow nesting of buckets for shipping and storage.



Circle No. 79 on Reader Service Card for more information

CHAIN BLOCK—Shaw-Box Crane and Hoist Division of Manning, Maxwell & Moore, Inc., has announced a new 'Budgit' Chain Block of one-ton lifting capacity. It contains many features in chain block construction, including the use of splines instead of keys. Also incorporated is an entirely new conception of a load brake that makes lowering easier and faster, because the chain pull to keep the load lowering with this new brake is almost negligible. The chain block weighs 42 lb.; this light weight is obtained by the simple mechanism and a frame and covers made from an aluminum alloy. The load chain is steel and heat-treated and designed for strength and toughness. All gearing and shafts are steel and heat-treated. The shortest distance between hooks is 15 ins.



Circle No. 80 on Reader Service Card for more information

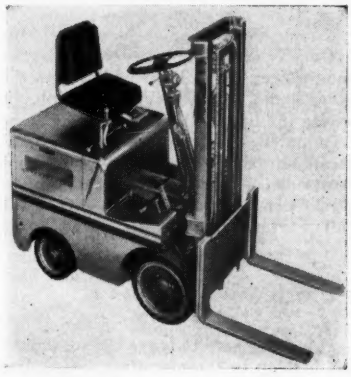
PORTABLE STRAPPING DISPENSER—For use in bulk binding loads in freight cars and trucks, on loading docks and in remote parts of warehouse is this portable strapping dispenser offered by the Signode Steel Strapping Co. On the job, the truck serves as a convenient working unit, with all tools and strapping, nails, seals, staples and anchor plates close at hand. It provides space for handling two different widths of strapping. All reels run freely because the strapping passes over anti-friction rollers.

Circle No. 81 on Reader Service Card for more information

LIGHT-WEIGHT FORK TRUCK—Lewis-Shepard Products Inc. is marketing a line of light-weight fork trucks for use in buildings with limited space and floor load capacities. Standard capacities are 1000, 1500, and 2000 lb. for loads 32", 40", and 48" long. Standard lifting heights on telescopic models are 130", 106" and 82" with corresponding collapsed heights of 83", 71" and 59". Compact design and proper distribution of weight combined with rear wheel drive allow the models to right stack in very confined quarters. Directionally operated controls for tilting of mast, lifting and lowering of load and traveling two speeds in each direction are foot operated.

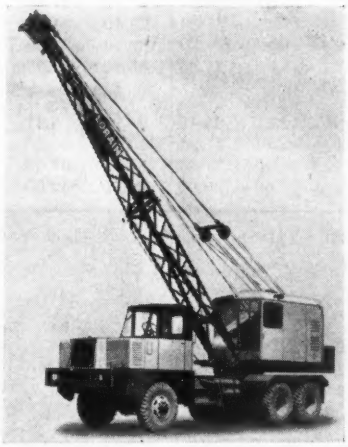
Circle No. 82 on Reader Service Card for more information

LIGHT-DUTY ELECTRIC FORK TRUCK—A 2000-lb. battery-powered fork truck is now being manufactured by the Clark Equip-Co. It is equipped with a separate motor to provide power for the hydraulic pump. According to the release, this results in an 80 per cent increase in lifting and tilting speeds over the former model. Lift heights are available in a range from 84 ins. with an over-all height of 61 ins., to 130 ins. and an over-all height of 84 ins. Standard tires are the demountable cushion type; pneumatic and pressed-on solid tires are optional. Other features: automatically accelerated control; control is non-plugging type; deadman brake operated off the drive shaft of the drive motor; high load capacity with 24-in. load-center rating. For further information, use the postcard in this issue.



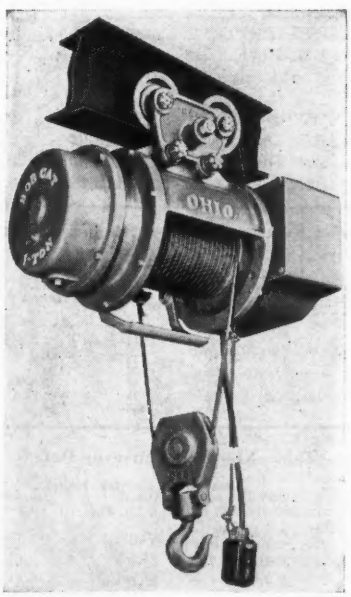
Circle No. 83 on Reader Service Card for more information

TIRE MOUNTED CRANES—Rubber tired cranes with 25-ton lifting capacities on outriggers of 10-ft. radius have been announced by the Thew Shovel Co. They are able to work with 130 ft. booms. The turntable of these machines is powered by six-cylinder gasoline engine. Power is delivered through twin disc hydraulic coupling power take-off and thence by a multiple strand roller chain drive to the operating mechanism. The booms consist of two 15-ft. all-welded sections, pin-connected with four pin and clevis connections. The boom head is equipped with three main boom head sheaves, plus auxiliary deflector sheaves, that permit up to six parts of hoist line without use of a top block.



Circle No. 84 on Reader Service Card for more information

HEAVY-DUTY ELECTRIC HOISTS—A line of heavy-duty electric cable hoists ranging in lifting capacity from ½ to 5 tons has been announced by The Ohio Electric Mfg. Co. The manufacturer states that design of these Bob-Cat hoists, with the motor totally enclosed within the cable drum, reduces over-all dimensions and results in a substantial weight saving. In addition, the motor is fully protected against weather, moisture, dust and corrosive atmospheres. Load sustaining parts are made from steel forgings and casting that give the units a factor of safety of over 6 to 1. The motor and gears run in ball bearings. Gear reduction is accomplished by means of a double internal (epicyclic) gear train that incorporates two load brakes. The motor brake is of the equalizing solenoid type connected to an up-limit cutoff switch. The load hook oscillates and swivels on roller bearings and is suspended on a 5/16 in. preformed plow steel cable that can be replaced without disassembling any part of the hoist.



Circle No. 85 on Reader Service Card for more information

Table VII—Belt Weight—Ounces Per Sq. Ft.

	PLY 3	4	5	6	7	8	10	12
32 oz. Duck								
Untreated	10.26	13.70	17.21	20.57	23.98	27.39	34.21	41.14
Wax	12.80	17.10	21.50	25.70	30.00	34.30	42.70	51.50
Bituminous	14.20	18.90	23.60	28.40	33.00	37.80	47.30	56.70
Oil	15.20	20.30	25.40	30.40	35.50	40.50	50.80	61.00
37½ oz. Duck								
Untreated	11.77	15.84	19.58	23.43	27.39	31.24	39.05	46.86
Wax	13.75	19.80	24.50	29.40	34.20	39.00	49.00	58.50
Bituminous	16.20	21.50	26.90	32.20	37.60	43.00	53.70	64.50
Oil	17.60	23.50	29.40	35.20	41.00	47.00	58.70	70.50
39 oz. Duck								
Untreated	12.10	16.17	20.19	24.20	28.27	32.34	40.37	48.40
Wax	15.10	20.20	25.20	30.25	35.30	40.50	50.45	60.50
Bituminous	16.70	22.30	27.80	33.40	39.00	44.50	55.60	67.00
Oil	18.00	24.00	30.00	36.00	42.00	48.00	60.00	72.00

Table VIII—Untreated Belt Thicknesses

Approx. Thickness Untreated	3	4	5	6
32 oz. Non-guaranteed Spec. Belt Duck	9/64	3/16	1/4	19/64
32 oz. Guaranteed Spec. Belt Duck	9/64	13/64	17/64	21/64
37 oz. Guaranteed Spec. Belt Duck	5/32	7/32	9/32	11/32
39 oz. Guaranteed Spec. Belt Duck	3/16	17/64	21/64	25/64

	7	8	10	12
32 oz. Non-guaranteed Spec. Belt Duck	23/64	27/64	17/32	9/16
32 oz. Guaranteed Spec. Belt Duck	3/8	7/16	9/16	11/16
37 oz. Guaranteed Spec. Belt Duck	13/32	15/32	19/32	23/32
39 oz. Guaranteed Spec. Belt Duck	29/64	17/32	21/32	51/64

Table IX—Ultimate Strengths

Ultimate Strength Pounds Per Inch Width	PLY 3	4	5	6
32 oz. Non-guaranteed Spec. Belt Duck	930	1,240	1,550	1,860
32 oz. Guaranteed Spec. Belt Duck	975	1,300	1,625	1,950
37 oz. Guaranteed Spec. Belt Duck	1,155	1,540	1,925	2,310
39 oz. Guaranteed Spec. Belt Duck	1,380	1,840	2,300	2,760

	7	8	10	12
32 oz. Non-guaranteed Spec. Belt Duck	2,170	2,480	3,100	3,720
32 oz. Guaranteed Spec. Belt Duck	2,275	2,600	3,250	3,900
37 oz. Guaranteed Spec. Belt Duck	2,695	3,080	3,850	4,620
39 oz. Guaranteed Spec. Belt Duck	3,220	3,680	4,600	5,520

Table X—Correct Relation Between Diameter, Belt, Ply & Speed

Ply	Under 2000 Feet Per Minute Desirable Diameter	Under 2000 Feet Per Minute Minimum Diameter	2000 to 4000 Feet Per Minute Desirable Diameter	2000 to 4000 Feet Per Minute Minimum Diameter	Over 4000 Feet Per Minute Desirable Diameter	Over 4000 Feet Per Minute Minimum Diameter
2	5	4	6	5	..	..
3	6	5	8	6	..	..
4	9	6	12	8	14	10
5	12	9	15	12	18	15
6	16	12	20	16	24	20
8	30	24	36	30	42	36
10	..	..	60	48	72	60
12	..	..	96	72	108	84

Table XI—Belt Conveyor Data

Belt Width in inches	Usual Ply	Spacing of Carrying Rollers Material 50# Cu. Ft.	Material 75# Cu. Ft.	Material 100# Cu. Ft.	Spacing Return Rollers
12	4	5'-0"	5'-0"	5'-0"	**12'-0"**
14	4-5	5'-0"	5'-0"	5'-0"	12'-0"
16	4-5	5'-0"	5'-0"	5'-0"	**12'-0"**
18	4-5	5'-0"	4'-9"	4'-6"	12'-0"
20	4-5	4'-9"	4'-6"	4'-6"	12'-0"
22	5-6	4'-6"	4'-6"	4'-3"	8'-0"
24	5-6	4'-6"	4'-6"	4'-3"	**12'-0"**
30	5-8	4'-0"	4'-0"	3'-6"	10'-0"
36	6-8	3'-9"	3'-9"	3'-6"	10'-0"
42	6-8	3'-6"	3'-6"	3'-3"	10'-0"
48	6-10	3'-6"	3'-3"	3'-0"	8'-0"

CANVAS BELTING . . .

(Continued from page 49)

mined by: 1. The width of the belt. 2. The size, weight per cu. ft. and abrasive character of the material fed to the belt. 3. The tension in the belt when it is being operated.

Table V gives some general figures on the usual plies, using belts of varying widths. The relation between width and ply is based largely upon considerations of flexibility. A narrow belt must not be too stiff to trough properly and a wide belt must be heavy enough to prevent buckling.

For a light material, such as grain, lighter plies than those given in the table may be used, whereas for hard, sharp, or heavy material, such as trap rock, a heavy body is needed to withstand the abrasive impact.

The number of plies is also determined by the total tension in the belt. After deciding upon the allowable unit working tension, the number of plies required can be determined from the following formula:

$$\text{Number of plies} = \frac{\text{Total Tension}}{\text{Allowable Unit Working Tension} \times \text{Width}}$$

The allowable unit working tension can be taken from Table I for whatever type of duck the designer may select and whatever safety factor he may want to apply. The selection of the type of duck and the ply necessarily go together. If the designer is limited by pulley size and cannot go to an extra ply, he may select 39 oz. duck which permits a much higher allowable working tension. On the other hand, he may require extra plies in order to get body or because of the width of the belt, in which case the allowable working tension will be very low and he will, therefore, select the lighter duck. Application of this thinking, plus the availability of four different grades of duck, will make it possible for the designer to make substantial savings in belt cost. Another consideration in this regard is that if the belt forms part of a permanent installation and seems unlikely to fail from cutting or accident, then for extremely long service the designer should keep the unit stress low. On the other hand, for a temporary job, or where the life of the belt is likely to be terminated by an accident or by extreme abrasive conditions, then the unit stress can be made higher and the designer can go up to or even exceed the full working tensions shown in Table I.

Folding

It is quite safe to leave the folding of the belt up to the manufacturer, unless the designer has some very unusual or special situation in which the seam of the belt may interfere. This should then be specified in the order.

Stitching

The stitching of the belt should then be selected from the standpoint of the smoothness of the carrying surface or pulley side, desired resistance to ply separation, and the flexibility requirements of the belt. Only in unusual cases will it be necessary to deviate from standard stitching.

Impregnation

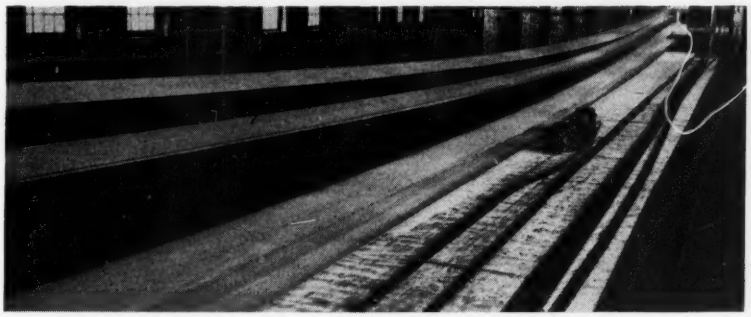
Impregnations should be very carefully considered. The data given in this connection will serve as a guide in selection. Never use an untreated stitched canvas or solid woven belt unless there is a very good reason. Its life will be materially shorter than a treated belt.

Coating, Curing

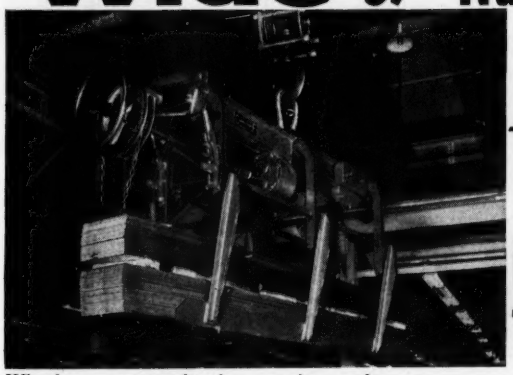
After the impregnation has been determined, additional belt life can be obtained and power requirements can often be reduced, by the use of a coating. The coatings described fit most applications and should be used wherever possible. Finally, include the method of curing in your order and allow ample time.

Acknowledgment! FLOW acknowledges with thanks the Main Belting Co., Phiadelphia, as the source of the data and exhibits appearing in this article. Thanks also to the Imperial Belting Co. and Victor Balata and Textile Belting Co. for their help in checking the manuscript.—Ed.

The finished treated belt is put under controlled tension during curing period.



Wide or Narrow...



1 C-F LIFTER HANDLES THEM ALL

Whether your production requires a few or many widths of sheet steel, 1 C-F Lifter, with its wide range of jaw and carrying angle adjustments will probably meet all your sheet handling requirements.

Adjustments are made by the operator in a few seconds, permitting the Lifter to shift from wide to narrow sizes almost instantly.

Because it can pick up, carry and unload more loads per hour, using less man and crane time than any other method, a C-F Lifter will soon pay for itself.

Bulletin SL-25 gives you the complete story of C-F Lifter advantages to you. Ask for it today. There's no obligation.

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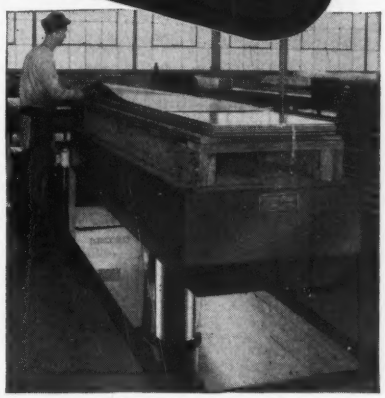
Machine Feeding 1950 STYLE



■ Alabama Metal Lath Company of Birmingham increases the productivity of men and machines by using six hydraulic LEVELATORS for feeding a battery of stripping, cutting and expanding machines.

Labor costs for machine feeding are reduced because hydraulic power, not men, lifts the stock. Materials are always at the height most convenient for fast, continuous feeding.

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Levelators are designed for loads up to 80,000 pounds, travel and speeds as required. When lowered they are level with floor and can be trucked over. Powered by air or hydraulic power unit. Simple, safe, dependable operation proved in hundreds of machine feeding installations throughout the nation.

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Rotary

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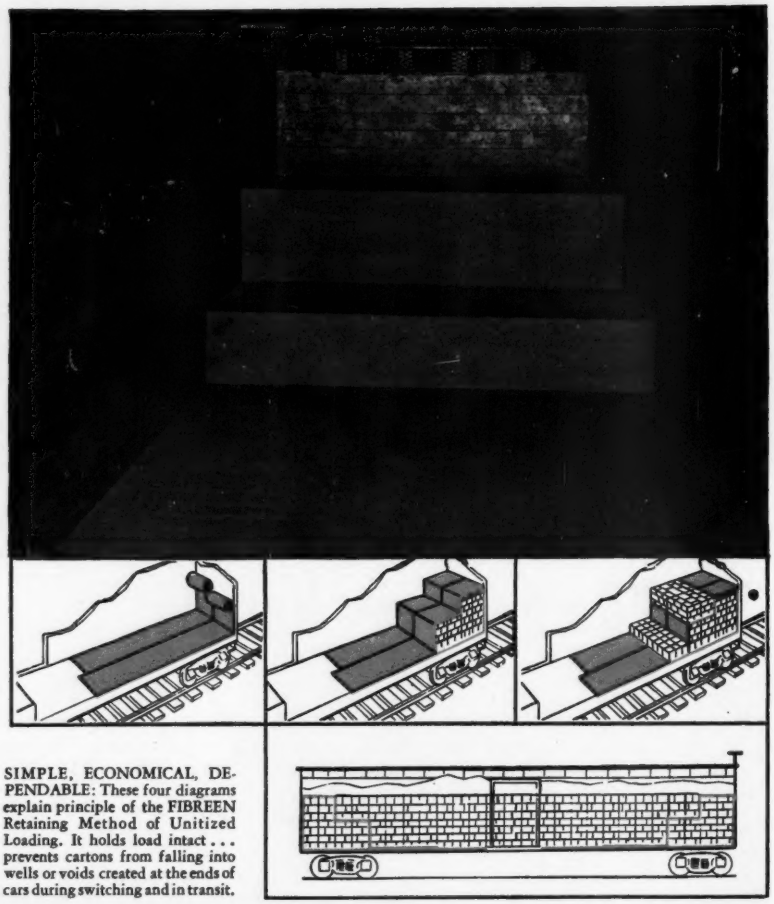
CLAIMS REDUCED 75% WITH FIBREEN UNITIZED LOADING

BIG FOOD SHIPPER REPORTS: "GRATIFYING RESULTS"

"On a movement of 108 cars (from Chicago to West Coast, Utah, Texas, Florida, Minnesota, New York and other areas north, east, west, and south), our records reveal that with FIBREEN protection, our damage prior to reconditioning averaged *less than 3¼ cases per car* . . . our claims have been reduced 75% since we adopted FIBREEN protection" . . . says the General Traffic Manager of one of America's foremost food canners. In some cars, loads had shifted 3" to 18" at the ends, but even then, the loads were intact . . . there was no tumbling of cartons into end-wells . . . the tough, non-stretching, waterproof FIBREEN proved strong enough to withstand the terrific strain and hold the loads.



SIMPLE, ECONOMICAL, DEPENDABLE: These four diagrams explain principle of the FIBREEN Retaining Method of Unitized Loading. It holds load intact . . . prevents cartons from falling into wells or voids created at the ends of cars during switching and in transit.

HERE'S PROOF! Not a Single Carton Dropped in Well

Photo shows one end of a car in which load had shifted about 10 inches. See how the FIBREEN held the load intact. No break in the retaining paper, no tumbling of cartons into end-well, no damage to cans. Reports from 92 consignees agreed on success of FIBREEN Method of Unitized Loading. Would you like to discuss your specific carloading problems with SISALKRAFT men experienced in this new method? Phone, wire or write: The SISALKRAFT Co., Chicago 6, Ill., New York 17, N. Y., San Francisco 5, Calif.

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A regular monthly section in which are presented solutions to the problems of efficient filling and handling the boxes, cartons, bags, bottles, cases, etc., used in commerce and industry.

CONTENTS

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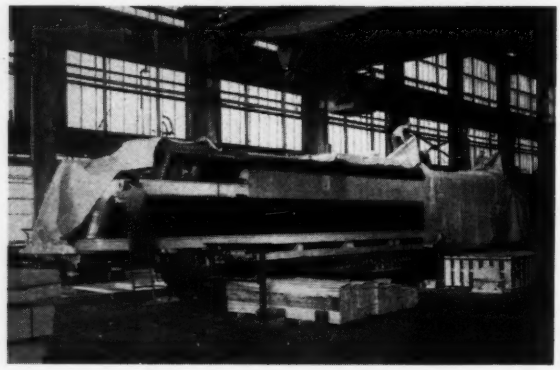
PROPERLY DESIGNED SHIPPING CONTAINER PAYS OFF. Formerly, two fragile clay components were received in separate packages, doubling the number of handlings and increasing storage area. The combining of these parts in one package during receiving has eliminated these objections and has also made possible a smaller shipping container for the completed model..... 66

Crepe Wadding Helps

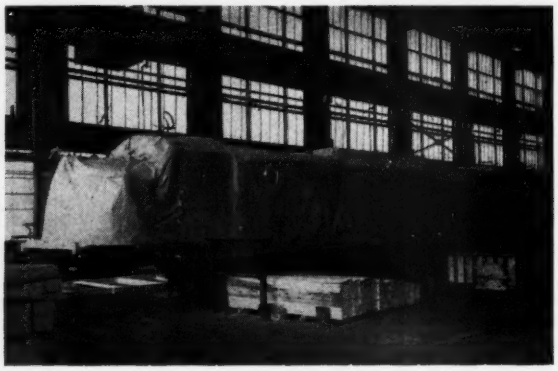
"The World's Largest Package"

HERE is what is believed to be the world's largest package. It contains a 231-ton electric engine to be shipped to South America. Of particular interest is the interior cushioning material which is designed to protect the highly finished surface of the unit during repeated handlings, both on land and during the ocean voyage. The same care is necessary in protecting the finish of this giant locomotive as for a small, delicate, easily scratched product.

As shown in the exhibits, a layer of creped wadding is first laid over the unit. Next, a layer of heavy paper is added, and after the top and side box frames are erected, another layer of paper is placed. The final step is the nailing of the boards to complete the box. The engine is packaged on the flat car which will be used to transport it to the boat dock where it will be handled with overhead equipment.

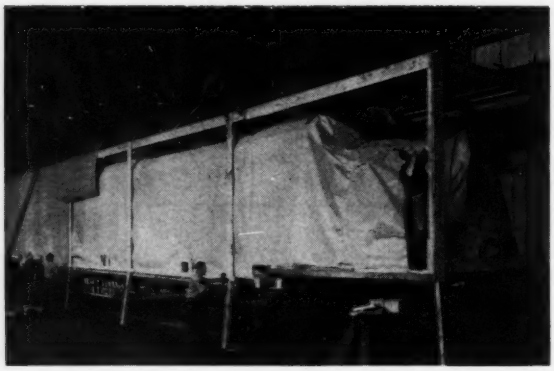


1 231-TON ENGINE first receives a wrapping of creped wadding which protects the highly finished surface during shipping. Next . . .



2 HEAVY PAPER is placed over the cushioning material to complete the insulation. Box members are on the floor. Third step is . . .

3 ERECTION OF SIDE and top frames and the addition of a final layer of heavy paper over the frames. Once this is completed . . .



4 BOARDS ARE NAILED in place, forming the top and sides of what is believed to be the world's largest shipping container.

GENERAL SHIPPING CONTAINERS ARE

designed for giving...

BETTER PROTECTION AT REDUCED COST!

HERE'S HOW—

General Box Company maintains two of the country's finest Designing and Testing Laboratories. *Every month,* scores of products arrive at these laboratories. Our Engineers re-design the containers so they are "Part of the Product"—so they are lightweight, extra-strong, compact! You, too, probably can substantially cut your packing and shipping costs. We'll be glad to provide full details. Better write today on this cost-reducing, profit-increasing subject.

HERE'S PROOF—

No. 7105

Gross Shipping Weight	
Old Package	410 lbs.
*New Package	364 lbs.
Weight Saving	46 lbs.

No. 7038

Gross Shipping Weight	
Old Package	
*New Package	120 lbs.
Weight Saving	104 lbs.
	16 lbs.

No. 7023

Gross Shipping Weight	
Old Package	39 lbs.
*New Package	34 lbs.
Weight Saving	5 lbs.

No. 7147

Gross Shipping Weight	
Old Package	95 lbs.
*New Package	83 lbs.
Weight Saving	12 lbs.

* "New Packages" were designed in our Designing and Testing Laboratories. Many of the hundreds of case histories on file show even greater weight savings!

General ★★★★★ BOX COMPANY

engineered shipping containers

GENERAL OFFICES:
60 W. Illinois Street, Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Cincinnati, Denville, N. J., Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, Sheboygan, Winchendon, Continental Box Company, Inc.: Houston, Dallas. General Box Company of Mississippi, Meridian, Mississippi.

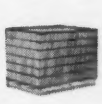
General Wirebound Crate

General Nailed Box

General Corrugated Box

General Cleated Corrugated Container

General All-Bound Box


Generalift Pallet and Pallet Box

General Watkins-Type Box

Circle No. 89 on Reader Service Card for more information

Properly Designed Shipping Containers Pay Off

By HUBERT D. PECK
Superintendent, Armstrong Products Corp.
Huntington, W. Va.

Two fragile components are now received in the same carton (instead of separately, as before). Handling and storage have been simplified. A reduction in the size of the shipping container and less complex interior packing, made possible by the new receiving plan, have lowered the price of the finished product.

IT is known that a reduction in the size of a shipping container can lower the unit cost of a product. By decreasing the number of fillers within the container, without sacrificing protection, a saving in packing time can also be achieved. Less packing time means increased hourly output of the packers.

Packing economies can be obtained by rearrangement of the parts within the shipping container, or by ordering from the vendor two components in the same carton when these are packed with the finished product in their original container. Our company has attacked this problem from both angles, but our principal economies have resulted from a new receiving plan. We have simplified storage and in-plant handling as well as packing.

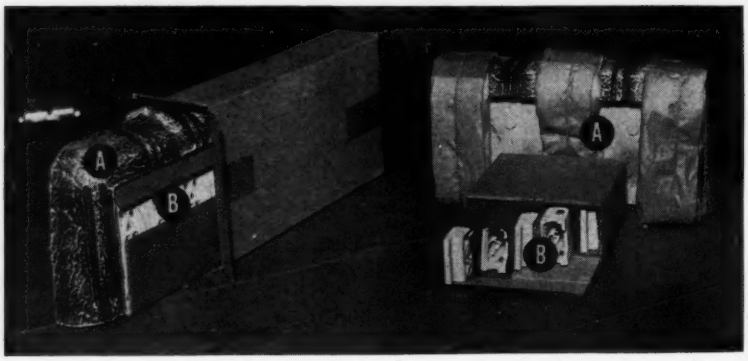
Two Packages—Double Handling

The Armstrong Products Corp. manufactures gas space heaters, electric ironers and heaters, spray pumps and five-gallon knapsacks (a portable sprayer used for shrubbery and fire fighting). The manufacture of radiant gas heaters constitutes a large portion of our production. Gas heaters consist of a porcelain enameled steel body, a cast iron burner and a clay backwall and radiants. The backwall and radiants are included in the shipping container in their original wrapping and are assembled by the customer.

The backwalls are 16″ to 20″ long, 10″ to 12″ high and 3½″ thick. The clay radiants are 2¾″ wide, 8″ high and 1½″ thick at the base. These parts are expensive and very fragile, and when broken or cracked, a total loss.

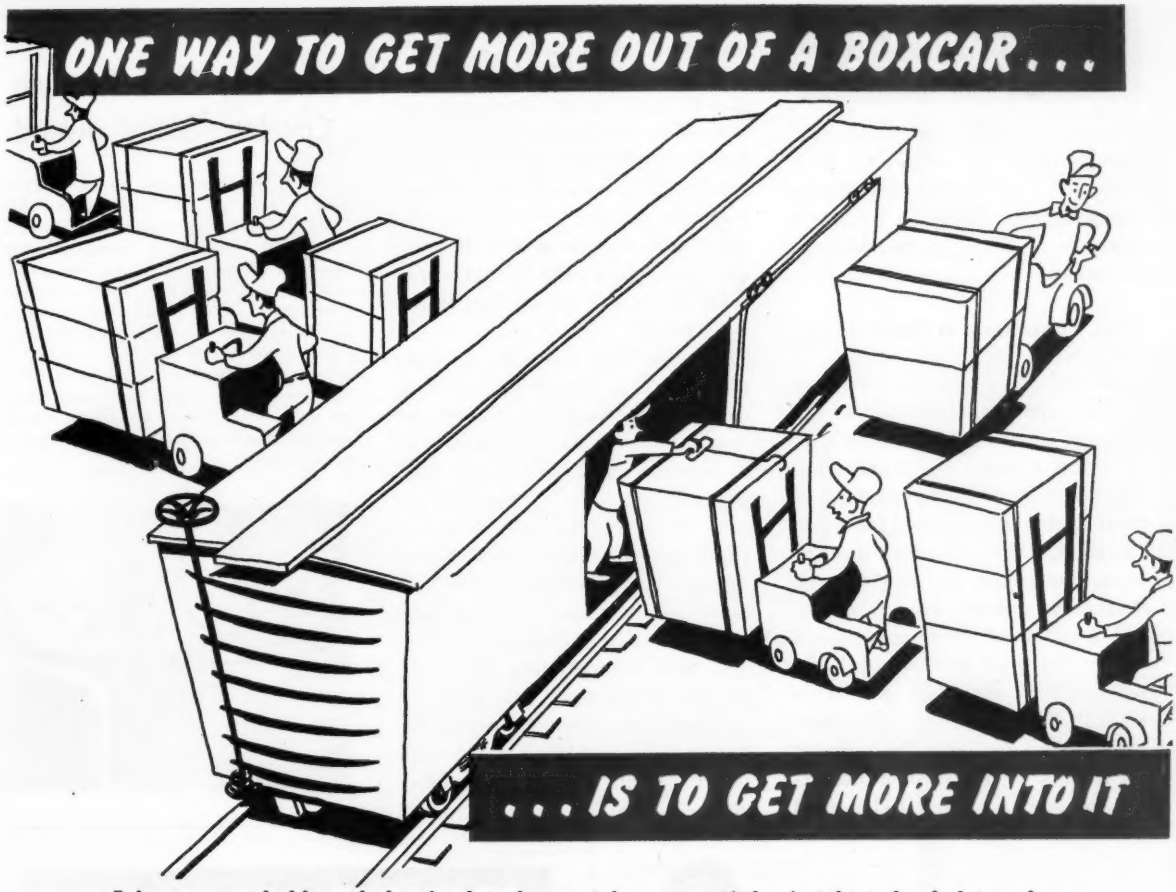
Formerly, the backwalls and radiants were received in separate containers. Backwalls were received one to a package, packed in excelsior and wrapped with three bands of kraft paper. A rubber band secured the package. Four to six radiants were each wrapped in corrugated kraft paper and packed in a fibreboard container.

Disadvantages were: 1. Too many in-plant handlings. 2. Large



AT RIGHT, the former method when a clay back-wall (A), and five radients (B), arrived in two packages. At left is the new container.

ONE WAY TO GET MORE OUT OF A BOXCAR . . .



A boxcar can hold a whale of a lot of material — even if the freight is loaded in a haphazard manner — but it can hold a lot more if the material is properly packaged and correctly loaded.

Brainard Strapping System engineers know boxcars inside and out. And they know how to get the most in them — either full car or l.c.l. So, if you're shipping by rail or truck or plane it will more than pay you to have Brainard's specialists look over your shipping operation. It costs you nothing, yet may save you hundreds of dollars each year. Be sure — use the handy coupon today.

THOSE WHO USE THE BRAINARD STRAPPING SYSTEM GET THE MOST OUT OF EVERY CAR---

You Can, Too

STEEL STRAPPING DIVISION

BRAINARD STEEL COMPANY

2138 *Larchmont Ave., Warren, Ohio*

SHARONSTEEL

Steel Strapping Division, Brainard Steel Company
2138 Larchmont Avenue, Warren, Ohio

I would like to have Brainard specialists check our packaging and shipping set-up at no charge.

Name_____

Title_____

Company_____

Address_____

City_____ State_____

Circle No. 90 on Reader Service Card for more information

amounts of space in temporary storage areas were required. 3. A 16" x 20" x 10" carton for shipping a standard size heater. 4. Excessive numbers of fillers in the shipping container.

Clay Components in One Package

Several years ago, the company and its suppliers worked out a plan whereby it received four to six radiants and a backwall in one fibreboard carton. Interior packing of these parts was improved for greater safety. This container has the same dimensions as the backwall itself. The radiants are wrapped in a thin section of fibreboard and rest within the open face of the backwall (where they are ordinarily placed when assembled). The fibreboard which encircles the radiants is not secured. Thus, when the outer container is opened for spot checking, inspectors can see a small section of the radiants.

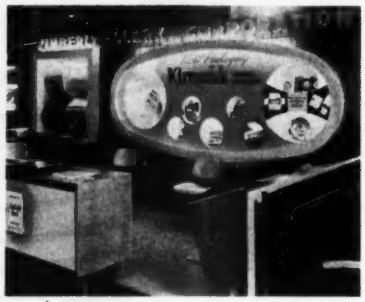
A standard heater is now packed in a 13" x 20" x 10" fibreboard carton. The length of this container has been reduced three ins. since the two clay components are combined in one package. We handle, store and ship thousands of these containers each year so that a considerable space saving factor has been noted.

Benefits from the new receiving plan are: 1. Handlings of these items during receiving, storage and in-plant moves have been halved. 2. Storage space for the clay components has been reduced 25 per cent. 3. Less fillers are needed in the shipping container. 4. Reduced number of fillers and less parts to pack has decreased packing time approximatelv one-third. 5. Storage area for outgoing stock decreased 20 per cent (see photo).

These and other improvements have made possible a more competitive selling price for our product.

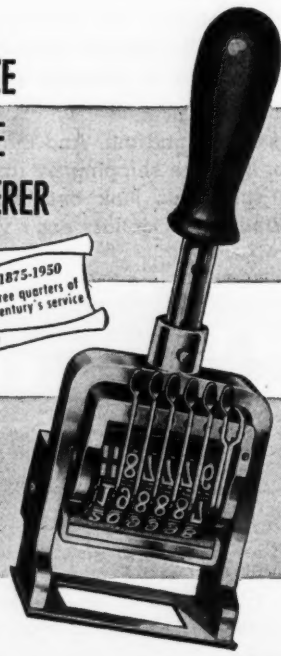
Kimberly-Clark Receives Coveted "Show" Award

The Kimberly-Clark Corp., Neenah, Wis., was selected a winner at the 1950 Inform-A-Show of the National Association of Purchasing Agents convention, Cleveland, June 11-14. The award was a plaque for the "most informative exhibit." The booth is shown here. All exhibits were outstanding and were thought to merit honorable mention, according to the prize committee. Only two could win. The other plaque went to J&L Steel Corp. Kimpak's educational value is evident from small photo shown here.



FORCE
CASE
NUMBERER

1875-1950
Three quarters of a century's service



MODEL 16

Heavy duty, fully automatic.
Prints legible numbers and markings on wood, cardboard, canvas, etc.

Write for catalog "E" on complete line

WM. A. FORCE AND COMPANY
INCORPORATED
64 WHITE STREET, NEW YORK 13, N. Y.

Circle No. 91 on Reader Service Card for more information

CRAMPED FOR ROOM ?

Save Valuable Floor Space with A-B-C Short Case Sealer

Seals top and bottom flaps of shipping containers . . . speedily, inexpensively, efficiently, AND IN FAR LESS ROOM.

A model for every job . . . both automatic and semi-automatic.

Write for Details and Floor Plans.

Better production-proven machines far faster, lower cost packaging.
(Case Sealers, Unloaders and Unscramblers, Side Sealers, Hand Gluers, Seal-All)

A-B-C PACKAGING MACHINE CORP.
QUINCY, ILLINOIS

Circle No. 92 on Reader Service Card for more information

Kimpak* Float Packaging

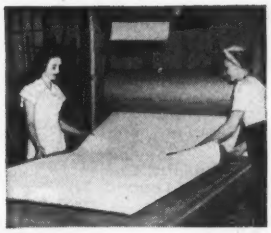
POSTER BED
Surface Protection

Cuts shipping costs — reduces damage in transit!

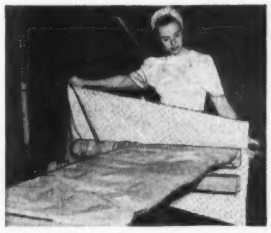
Last year, dozens of manufacturers of furniture and other products revised and streamlined their packaging operations based on facts and figures about KIMPAK* Float Packaging. They found, through actual comparison, that KIMPAK offered more economical, more *dependable* packaging protection. And because there is a specification of KIMPAK for every cushioning need, these facts may apply to your packaging operation as well:

- KIMPAK creped wadding, in rolls or sheets, is as easy to apply as wrapping paper. It saves literally hours in the shipping room.
- KIMPAK is clean and free from damaging foreign matter; will not scratch, rub or pressmark delicate finishes. It's *pleasant* to handle.
- KIMPAK is a highly efficient cushioning material—made *especially* to absorb continuous vibration and severe shocks, defend against roughest handling. Its "springy" resiliency provides *float packaging*—the world's most effective shipping protection.
- KIMPAK is the neatest, most attractive cushioning for your product. It's fresh-looking both *before* and *after* using—completely eliminates litter and mess in unpacking.

Today, won't you investigate KIMPAK Float Packaging, and compare it with your present methods? For immediate detailed information, contact the KIMPAK distributor listed in your classified phone directory under "Packing Materials" or "Packing Materials—Shipping", or write to Kimberly-Clark Corp., Neenah, Wis.



1. Sheets of correct dimension are easily cut from rolls of KIMPAK. No waste.



2. All finished surfaces of head and foot pieces are completely protected by KIMPAK.

3. As each KIMPAK sheet is applied it is firmly attached by stapling, taping or tying.

4. Final KIMPAK-wrapped package is now ready for loading into full freight car, eliminating any further packaging protection.

All photographs courtesy of New Orleans Furniture Manufacturing Co.

VISIT OUR BOOTH NO. 801 AT THE WESTERN PACKAGING AND MATERIALS HANDLING EXPOSITION CIVIC AUDITORIUM, SAN FRANCISCO, CALIF., AUGUST 16-18

Kimpak
REG. U.S. PAT. OFF. & FOREIGN COUNTRIES
CREPED WADDING

A PRODUCT OF Kimberly Clark RESEARCH

*T. M. REG. U. S. PAT. OFF.

FREE BOOKLET

KIMBERLY-CLARK CORPORATION F-850
Neenah, Wisconsin

Please send me free, the illustrated KIMPAK Booklet, "Float Packaging".

*Name*_____

*Firm*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

Circle No. 93 on Reader Service Card for more information

USEFUL BULLETINS • BOOKLETS • CATALOGS

The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.

Conveyor Case Studies . . . Bulletins 192 and 193, available from Stephens-Adamson Mfg. Co., present case studies of its conveying equipment in a wide variety of bulk handling operations. These include a zipper type conveyor in a pottery; belt conveyors moving crushed rock in a yard; Redler conveyors in a macaroni plant; belts transporting coal and ore. Each study is generously illustrated with action and component shots, and engineering drawings. More than 20 studies. Detailed description of installations and equipment is offered.

Circle No. 94 on Reader Service Card for more information

Material Handling Equipment . . . More than 60 pieces of equipment are illustrated in a brochure issued by Service Caster & Truck Corp. Sixteen types of casters with various capacities and construction are shown. These include tongue type, underslung rigid type, rubber tired dual casters, grooved wheel type and vertical angle mounted type. Custom built lifting devices described include roller top die liftable; hand hydraulic paper roll lifter; electric hydraulic die table; dumping hopper; and telescopic electric hydraulic maintenance lifter. In addition a wide variety of standard and special floor trucks are included. Another publication available concentrates on a large line of carriages for the company's portable elevators.

Circle No. 95 on Reader Service Card for more information

Industrial Batteries . . . The latest issue of Modern Material Handling, issued by Thomas A. Edison, Inc., is now available. In its 28 pages are listed pertinent facts on the load unit method of material handling, the power requirements of industrial trucks, and the characteristics of nickel-iron-alkaline storage batteries. Illustrated pages show trucks in various operations using the load unit system with different types of products. Two pages are devoted to an article entitled "Time and Motion Analysis". Charts, photos and graphs are used in explaining power requirements of industrial trucks. Detailed description and additional photos complement the text in describing operating features and construction of the company's line of batteries. A worthwhile publication which should be of interest to many plants.

Circle No. 96 on Reader Service Card for more information

Flexible Cable Conveyors . . . A pamphlet available from Teleflex, Inc., contains facts on its flexible cable conveyors designed to operate around bends and through rise and fall. The equipment consists of a cable and a special metal rail. The cable provides a spiral thread on its exterior, the thread of the cable extends above the rail section and the cable is revolved within the rail. The units to be transported are suspended from hooks carried on the rail and propelled along it by the screw action of the revolving cable. Maximum load is 15 lb. per ft.; speed is up to 12 ft. per minute. Five engineering drawings give detailed construction information. General data and operating principles are included.

Circle No. 97 on Reader Service Card for more information

Floor Trucks . . . A series of catalog pages, offered by Towsley Trucks, Inc., contains data on its wide line of floor trucks. Included are general purpose platform types with capacities from 1000 to 6000 lb.; drum and barrel trucks; floor trucks designed for the furniture and woodworking industries; two-wheel hand trucks; and special purpose all-steel trucks. Profusely illustrated. Easy-to-understand text explains features.

Circle No. 98 on Reader Service Card for more information

Skid Platforms . . . The Lanham Co. is offering a brochure on its line of skid platforms, steelbound sectional bins, four-way entry skid boxes, and live, semi-live and dead skid-mounted structures. Photos and drawings detail various models and their components. Specifications are given, also particular features of different types of equipment. This publication should be of value to those responsible for all phases of inter-departmental moves.

Circle No. 99 on Reader Service Card for more information

Hydraulic Shop or Truck Hoist . . . The Unit Mfg. Co. has issued a catalog page on its hydraulically operated shop or truck hoist. It may be mounted on the beds of highway vehicles, on a machine in the plant, or on a castered frame for easy movement around the plant. It is claimed that it may be converted from a portable to a fixed installation in a very short time. The hoist swings 360 degrees. Other topics discussed include portability; special locating pin; roller bearings in floor frame wheels; double action hydraulic pump; tubular steel construction.

Circle No. 100 on Reader Service Card for more information

Casters . . . Light, medium and heavy-duty casters are the subject of a folder offered by the Faultless Caster Co. The three classifications are broken down into the rigid and swivel types, with pictures of all models tying in with the detailed specifications. Casters are offered with steel and rubber wheels. A worthwhile publication which lists a great deal of information in concise, easy-to-read form.

Circle No. 101 on Reader Service Card for more information

Hydraulic Side Loading Fork Truck . . . The Traveloader, manufactured by the Lull Mfg. Co., is the subject of a brochure now available. Its side loading feature is designed for operation in narrow aisles with lengthy materials. With its several attachments, it can be used as a yard crane, a spooled cable reeler, and a strip steel carrier. Richly illustrated with action photos showing the equipment picking up, transporting and unloading such loads as lumber, steel, pipe and pallets. Charts, specifications and operating features.

Circle No. 102 on Reader Service Card for more information

Mobile Cranes . . . An interesting brochure from the Thew Shovel Co. contains many action photographs of its tire-mounted and crawler-mounted cranes. These are used for handling bulk materials, barrels and tanks, bars, castings, lumber and other types of loads. Operating features are given.

Circle No. 103 on Reader Service Card for more information

Trolley Conveyors . . . A catalog page describing Un-O-Veyor trolley conveyors is offered by Michna Systems. The chain has a locking device which is said to offer fast, easy assembly. Two load wheels and two thrust wheels per set of links are two inches in diameter with ¼" diameter ball bearings in each wheel. The chain has 4-½" pitch malleable iron links with integrally attached clevis at multiples of nine ins. Engineering drawings.

Circle No. 104 on Reader Service Card for more information

Bag Closing Machine Bulletin . . . Union Special Machine Co. has issued a descriptive bulletin, No. 200, on its equipment for closing filled textile and paper bags. The brochure gives complete information about sewing heads, columns, tables, conveyors, and accessories. To facilitate selection of machines, the bulletin contains easy-to-use tables which detail the characteristics of both sewing heads and machines. A packer, knowing his daily capacity, bag sizes, weights, and type of closure required, can quickly locate in these tables the exact machine to fit his particular needs. In addition to detailed descriptions and photographs of equipment, the brochure contains many installation pictures which show the adaptability of the equipment to various plant conditions. The switch types and variety of closures—plain sewed, Dubl-Tape, filter cord, tape-bound—made by the sewing heads are also illustrated and explained.

Circle No. 105 on Reader Service Card for more information

Fork Trucks For Metal Working . . . Towmotor Co., Cleveland, has prepared for the metal working industry a new Certified Job Study based on savings through efficient materials handling at the Pittsburgh Equitable Meter Division of the Rockwell Manufacturing Co., Pittsburgh, Pa. Outlined in detail are handling methods which effected substantial savings in man-hours and increased storage space 200 per cent. The study illustrates 12-ft. stacks of 100 to 160-lb. castings, formerly stacked three to five ft. high by hand methods. In addition to this utilization of space, the company claims to have saved eight man-hours per day in unloading and transporting 11 to 12 tons of castings to storage. Neat, orderly piles permit quick identification for inventories and fast removal to production.

Circle No. 106 on Reader Service Card for more information

Power Rolling Equipment . . . The spring issue of The Lever, published by Lewis-Shepard Products Inc., contains numerous case studies of the company's fork and hand-guided trucks. They are pictured removing pallets loads from a case sealing line, with a dump bucket unloading bulk material, storing large tanks, and stacking cased goods. The equipment is shown with a variety of attachments. In addition, several pages are devoted to hydraulic hand lift trucks, hydraulic single-face pallet trucks, box and rack trucks and elevating units.

Circle No. 107 on Reader Service Card for more information

Belt Fasteners . . . Several bulletins have been combined in a folder and are available from Flexible Steel Lacing Co. Items presented are belt fasteners, rip plates, belt cutting tools, V-belt fasteners. Pictures show both action views and close-up shots of fasteners. Easy-to-read text complements the numerous photographs. Improvements in belt fastening practices are discussed in detail, also specific belt fastening problems.

Circle No. 108 on Reader Service Card for more information

Crawler Mounted Crane . . . A handy pocket-size booklet, issued by Unit Crane & Shovel Corp., describes its Model 614, ½-yd. crawler mounted crane. It is said that the unit may be converted to all attachments, including shovels, draglines, clamshells, trenches and magnets. The cranes have a capacity of six tons at a 12-ft. radius. Also shown are other models manufactured by the company, including additional crawler mounted and several tire mounted types. Its 10 pages are crammed with valuable information and interesting on-the-job photos.

Circle No. 109 on Reader Service Card for more information

Riding Type Tiering Truck . . . Lyon-Raymond Corp.'s new riding type SpaceMaker Electric Tiering Truck is described in a four-page, two-color bulletin which is now available. Three models are explained; the skid tiering model, pallet tiering model for single faced pallets and a pallet tiering model for double faced pallets. The truck will tier 48" x 48" loads at right angles from a 6' aisle. Action photographs illustrate this space saving feature and suggest many applications. The pallet models are designed to handle 2000 lb. at 24" load center and the skid model will handle 2000 lb. and 4000 lb. Specifications of all the various models are listed and discussed.

Circle No. 110 on Reader Service Card for more information

Trolley Conveyors . . . Specifications of standard stock units of Universal Trolley Cable Conveyors are given in Bulletin #41, announced by The E. W. Buschman Co. These units allow field erection of an overhead trolley conveyor, without welding, it is said. Also shown are action photos illustrating applications in industry, fruit and vegetable packing plants. Automatic loading and unloading are shown. The bulletin gives condensed data on trolleys, tracks, idler turns, vertical "S" curves, drives and quick vertical dips.

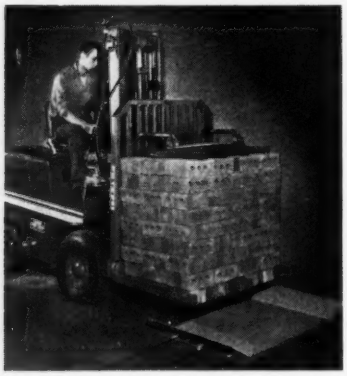
Circle No. 111 on Reader Service Card for more information

Tractor Shovel . . . Model HE is the designation of a new Hough Payloader tractor shovel with a ½-yd. bucket capacity. It is described in detail in a six-page, two-color folder issued by the Frank G. Hough Co. The equipment will

NEW BRICK PACKAGE

An advance report. All tests to date indicate that the method is practical and economical.

THIS brief report illustrates a new brick packaging method, which is so recent that it is still in the testing stage. Eleven tests made under actual operating conditions in a Kansas City (Mo.) plant have been completely successful.



CUBE IS SPOTTED on bottom paperboard which is lying on guide board.

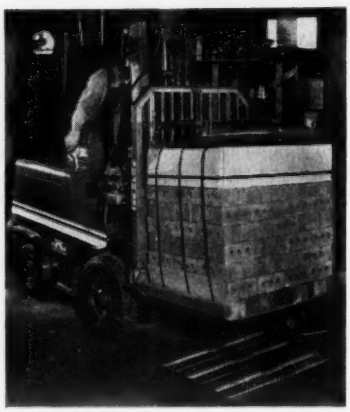
While a somewhat different method has been developed elsewhere in the country, the one described here is in conjunction with a hydraulic brick fork, corrugated paper board that has been treated for water repellency, and steel strapping in widths of ½" and ⅜". The width depends on whether the banding is to be used with a 2000 lb. or a 4000 lb. load.

The finished brick is laid into the specific pattern for packing, without requiring a fixture. The load is spotted on a guide board, slotted for accommodation of the steel strapping, as shown in one of the photos.

The truck with the hydraulic gripping fork spots the cube on the bottom paperboard, which has been placed over the lengths of banding. Three bands are tensioned over the load in the bottom to top direction, while the fourth band is applied around the top board.

Note that the pallet or stringer bricks are stacked for entry of the two center gripping arms. These move outward as pressure is exerted by lifting the cube; at the same time the outside forks (one on each side) move in to grip the pallet bricks, which are set in about two inches from each side.

The impregnated paper board keeps out rain, soot and other loose dirt. This is especially desirable where bricks of lighter shades are stored by building contractors for several weeks or months. Test rail shipments up to 500 miles have been made successfully. Estimates based on early tests show that the cost of the paper board and steel strapping will be less than $1 per cube.



STEEL STRAPPED and packaged cube is picked up for delivery to car.

dig, load trucks, grade, level, backfill, spread and transport all types of bulk material inside the plant and in the yard. It has a full reversing transmission with four forward and four reverse speeds coupled with forward-reverse control separate from the regular gear shift. Engineered design includes ball bearing steering, hydraulic brakes, full dumping clearance of 91 ins. Its capacity for dumping and closing the bucket hydraulically is designed for dumping loads slowly or abruptly as desired. The publication is profusely illustrated with action views and detail photographs of the equipment. The addition of the Model HE to the Payloader line makes five sizes of these tractor shovels available, with bucket capacities ranging from 12 cu. ft. to 1½ yds.

Circle No. 112 on Reader Service Card for more information

Packaging Lumber . . . Handling, packaging and shipping lumber and millwork are the subjects of a four-page folder, "Important Ideas For You." It is offered by Signode Steel Strapping Co. It pictures how to package lumber and allied products to protect them from damage in transit, pilferage and accidental loss.

Circle No. 113 on Reader Service Card for more information

Rotary Storage Bins . . . How to save up to 50 per cent or more of floor space is explained in a six-page brochure offered by The Frick Gallagher Mfg. Co. Twenty-five types of equipment and 18 accessories are illustrated and described. It is designed for those responsible for parts and stock storage in manufacturing processes as well as tool cribs and shipping rooms.

Circle No. 114 on Reader Service Card for more information

Palletizing Brick . . . How to pack, handle and ship brick and related masonry is the subject of an illustrated folder, "The Signode Method of Palletizing Brick." It is offered by the Signode Steel Strapping Co. It describes modern methods of palletizing, handling, stacking and car loading. The manufacturer states that following the recommendations made in this folder can help reduce losses from chipping and breakage, simplify handling, speed loading and unloading, permit faster stacking, and improve inventory methods.

Circle No. 115 on Reader Service Card for more information

Crane Scales . . . Bulletin No. 501, issued by The A. H. Emery Co., brings up-to-date and consolidates information on the use, features, and construction of its hydraulic crane scales for measuring loads while in transit. Complete information is included on load capacities, dial sizes, and price of standard model crane scales, as well as a section

on the remote load indicating or printing system which allows weights to be read and recorded at distances of up to 1000 ft. from the scale itself. Considerations when ordering are discussed and include suggestions and information on such factors as capacity, dial sizes recommended, eye level, tare load.
Circle No. 116 on Reader Service Card for more information

Racks... A comprehensive, 24-page, fully illustrated catalog on racks has been issued by the Unistrut Products Co. It includes 46 different photographs of typical rack applications. Drawings of the various sizes of metal channel and basic fittings are also incorporated in the catalog. The racks have industry-wide application, are completely adjustable to meet changing requirements, and provide great strength without bulk. Bolter frame construction is said to eliminate need for drilling or welding, and the material is reusable in the event dismantling of the rack is necessary.
Circle No. 117 on Reader Service Card for more information

Fork Trucks... The "How To Handle It" issue of the Material Handling News, published by the Industrial Truck Division of the Clark Equipment Co. is available. It points out that many of the handling devices and methods now in use originated by fork-truck users. Applications of Clark fork-lift trucks and attachments are pictured handling newsprint and other materials rolled around a hollow core. Also shown is an industrial tractor used in wholesale grocery warehouses for order-selection work; the company's Universal Clamp and its adaptations, handling cartons, drums, and cotton bales in a number of different combinations. Included is a map showing the location of each of Clark's dealers in the United States, together with a directory. In the Export version, foreign distributors are located geographically.
Circle No. 118 on Reader Service Card for more information

Hydraulic Lift Trucks... In Bulletin 5031, engineering sketches present in detail the features of the Barrett MD Hydraulic Lift Truck, manufactured by Barrett-Cravens Co. Characteristics include: self-contained hydraulic system, with no oil lines, in a streamlined, dirt-excluding housing; single frame, with greater under-clearance to avoid obstructions. Full 270-degree handle swing is designed for easy maneuvering in close quarters. Sketches show the construction of the unit in every detail. The MD model truck has a load capacity of 5000 lb, with six-in lift. Its pallet model, the MX, has a capacity of 1000 lb. with a four in lift. The bulletin contains complete specifica-

• Tiering to 26 feet, quickly, accurately and safely. One of a fleet of MERCURY Fork Trucks aiding this large company to fully utilize warehouse space with minimum cost. Compact design permits easy maneuverability . rear control feature provides added safety and better vision when tiering loads. MERCURY'S 40 years' experience designing, manufacturing and installing handling equipment is available without obligation. Ask to have a MERCURY Sales Engineer call.

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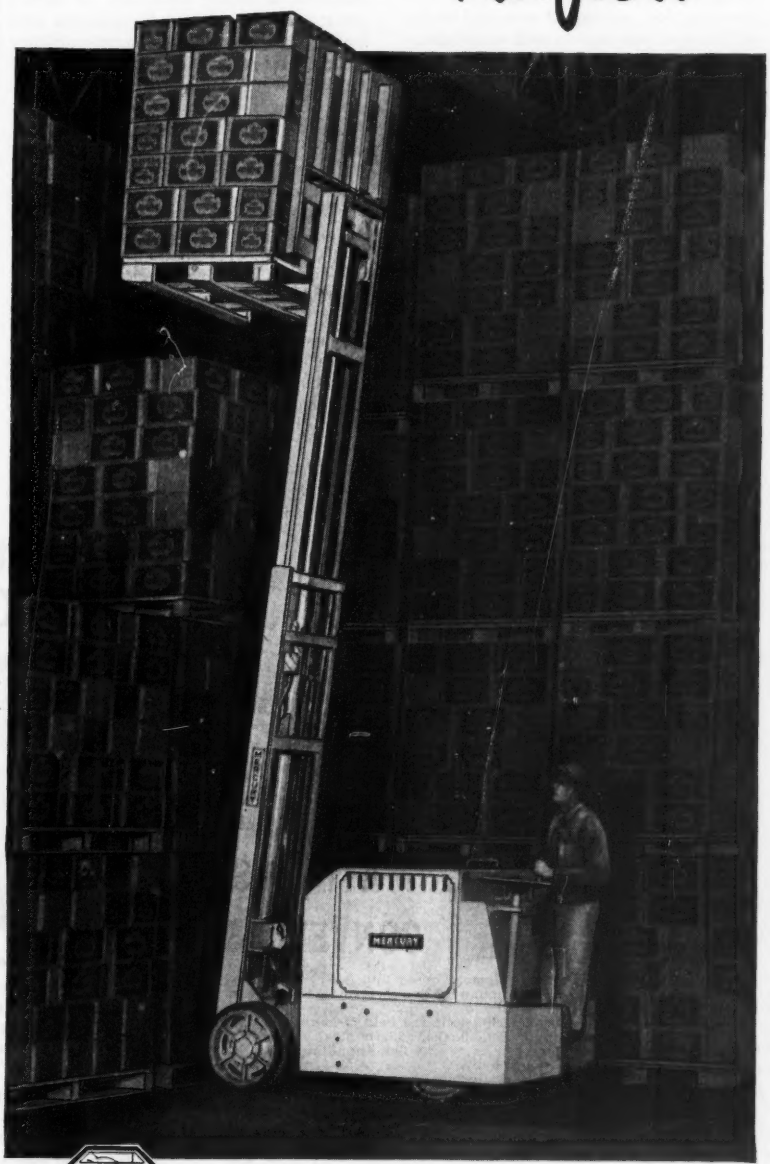

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Truck illustrated is a Mercury Rear Control "Yak."

THE MERCURY MANUFACTURING COMPANY
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tions on both types. Larger capacities are available in special units.

Circle No. 120 on Reader Service Card for more information

Containers for Bulk Goods . . . The General Container Corp. has released a four-page folder illustrating and describing its three-piece self-reinforced containers for shipping heavy bulk materials. The cartons consist of one ready-stitched inner box and two corrugated outer caps which are identical and interchangeable. Known as Keg-Packs, they are sent to the user knocked down but are stitched and ready for assembly for packing. According to the publication, one carton will carry up to 300 lb. of bolts, nuts, nails, screws, rivets, springs, fittings etc. The containers are designed for palletizing; smooth, flat surfaces allow detailed identification. This colorful folder contains many interesting illustrations showing the cartons in storage, being assembled and packed and during shipping. Easy-to-understand text points out construction and packing features together with space saving during storage.

Circle No. 121 on Reader Service Card for more information

Use the postcard bound into this issue for more information on advertisements, New Products and Free Literature. Note the number to circle below each item.

"Teamwork In Cutting Costs."

Review of book which resulted from series of meetings of industrial specialists. $5 per single copy. See ad on page 79.

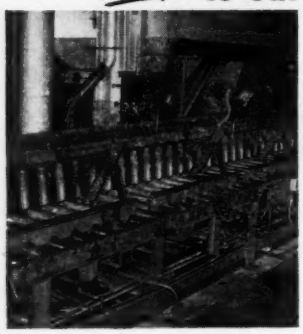
A UNIQUE effort has recently been made by a group of Northern California executives and engineers to focus attention on certain significant material handling problems. A series of six 2-hour afternoon sessions and two dinner meetings brought together selected representatives from 81 different corporations and government agencies. They pooled their ideas in a systematic effort to promote teamwork in cutting the excessive costs of handling the vast variety of commodities produced, stored, and shipped through this area. With the help of invited experts from large Eastern centers, they reviewed recent engineering developments and modern mechanical equipment and the progress made by shippers, transportation companies, terminals, and warehouses since the war.

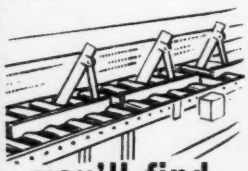
Two nationally known corporations collaborated in a countrywide survey of disposable pallets and unit loads without pallets; leading manufacturers of fork lift trucks, conveyors, and bulk handling facilities sent representatives to describe the savings possible through such equipment and to outline some of the most interesting innovations still in the experimental stage. Serious attention was given to piers, terminals, wharves, and the use of modern devices for fast, safe, economical cargo movement on docks and ships. Several somewhat revolutionary ideas are included in the report, such as rolling decks, two new prototype ships recently designed by the Maritime Commission, and the possibility of building trailer body carrying ships.

The unusual point of view adopted by this Institute is the theme that real progress in material handling economy depends on collaboration among a long list of those who comprise the transportation and storage chain leading from the producer of raw materials to the ultimate consumer. For example, if the type of pallet load designed by a factory or cannery does not square with the ideas or equipment of the stevedoring firm or the rail terminal or the truck operator, a heavy investment in modernization may be wasted. The Navy points out that its efforts to standardize unit loads or encourage uniform pallet sizes fail to gain the desired benefits unless general cooperation on the part of industry is secured.

Both technical reports and discussions have been carefully edited. Only vital material of permanent value has been included, thus making the publication interesting to all those concerned with material handling in any of its phases.

Where equipment has to be *tough* to survive . . . . . you'll find MATHEWS CONVEYERS





Conveying equipment going into heavy industry has to be rugged, or it won't be around for long. It must have the right stuff built into it if it is to stay on the job.

Mathews Engineers are specialists in the field of heavy conveying. Whether the loads are ingot mold flasks, coils of steel, or brass bars —whether they weigh one ton or twenty-five—handling them is an everyday job for Mathews Conveyers.

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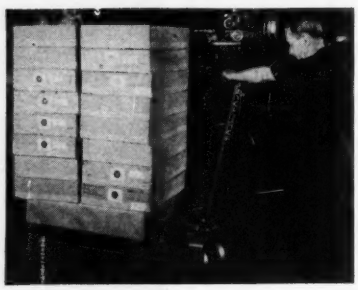

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Single, Two Stroke, and Multiple Stroke Hydraulic. Capacities: 2,000 to 15,000 lbs.

NOTE: One or more of our modern GO-GETTER Walk-Along Lift Trucks—six types—will fill your every requirement for efficient POWER Lift Trucks.

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Flow DIGEST

The subject matter contained in each of the following digests was obtained from the magazine to which we give credit below.

Foundry, April 1950. "Sand Distribution System Operates Automatically," page 118. A motor driven distribution bucket with 24 cu. ft. capacity feeds molders' bins at the Standard Automotive Parts Co. The overhead equipment operates on a double track, stopping automatically and discharging in first molder's bin calling for sand. It then returns to the muller. Advantages and operating features given. Also:

"Handling Materials at Shakeout", page 90. An illustrated report on hoists, conveyors and other equipment used for handling of molds to shakeout and castings away from shakeout.

Mill & Factory, June 1950. "Operating Improvements Reduce Manufacturing Costs", page 107. A new production and inventory control system, modernized tools and equipment at the Otis Elevator Co. Major results: reduced volume of stocks on hand; 85 to 90 per cent of deliveries on predetermined schedule. Pictured: conveyorized travel through finishing ovens, assembly of elevator cars aided by overhead bridge crane. Also:

"Push-Button Packaging in Grease Plant", page 136. The Standard Oil Co.'s new plant in California incorporates latest mechanical equipment and labor-aiding conveyorized layout. Gravity flow is utilized. Serving for high-speed output: portable filling and weighing equipment can fill and weigh four barrels on one pallet. A mile-long conveyor system in the barrel dispatch section is controlled from a central station. Fork trucks and roller conveyors load outgoing containers on highway trucks, rail cars. Capacity: 38 million lb. of lubricants yearly.

Machine & Tool Blue Book, March 1950. "How Sterling Motors Increased Production Through Efficient Materials Handling, page 77. How overhead trolley conveyors transport power drives during final assembly. Photos illustrate operating flexibility.

Paper Mill News, May 20, 1950. "New Sulphite Bleachery At The E. B. Eddy Company", page 38. A report on one of the most modern and efficient sulphite pulp bleacheries in Canada. Movement through plant is described, step by step, together with handling equipment. Flow charts and floor layouts. Fork trucks pick raw and finished goods off floor roller conveyors. Attachments on head pulleys of powered conveyors remove pulp crumbs.

Steel, June 5, 1950. "The Davenport Story—by Alcoa", page 74. A picture report on a new aluminum sheet and plate rolling mill. Capacity at present, 15 million lb. monthly, can be doubled. High capacity overhead equipment spots heavy material on beds of milling machines and mills. Other operational phases pictured: charging the melting hearth, casting ingots, annealing, cold rolling and heat treating.

Manufacturing and Industrial Engineering, May 1950. "Gasoline Versus Battery Power Industrial Trucks", page 20. Conclusion: plant needs dictate type to choose. Charts give cost estimates for both types, based on working hours per day of four, six, eight, 16 and 24. Graphs give the total cost for gasoline and electric power per hours of operation per year.

Tool Engineer, March 1950. "Materials Handling in Manufacturing", page 22. Handling techniques at Westinghouse: repositioning materials from automatic setup for next operation; work stations built around resistance welder and automatic screw driver; positioning subassembly for subsequent operation.

...NEW! AMERICAN "PAK-IT" Hand Truck

the answer to easy low cost handling of cases and cartons

The "PAK-IT" is designed to meet the need for a sturdy, lightweight hand truck that will move up to 50-inch high loads with greatest efficiency. Rolls smoothly, quietly, easily through tightest spots in plant, store, on platform or motor truck. "PAK-IT" gives you 5 new American features...

1 Choice of 3 HANDLES—single or double rubber-grip handles or tipped top-bar handle.

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3 Floor-saving, ZERO-PNEUMATIC tires that glide over bumps.

4 STAIR-CLIMBER—full-length bridge-truss construction.

5 FINGERTIP BALANCE adds extra maneuverability—extra safety to load.

Your Choice!

GRIP "A" Tipped top-bar handle.

GRIP "B" Single, rubber-grip handle.

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INSTITUTE, SOCIETY, ASSOCIATION AND CHAPTER ACTIVITIES

ON June 26 The Connecticut Valley Material Handling Society visited the plant of A. G. Spalding & Bros., Inc. in Chicopee, Mass. After the election of officers, members and guests heard Arthur R. Wiley, National Warehouse Manager of the company speak on "How and What We've Accomplished in Material Handling."

THE following have been elected officers of the American Material Handling Society for the coming year. President, Donald W. Pennock, Carrier Corp., Syracuse; vice president, Herbert H. Hall, Aluminum Co. of America, Pittsburgh; treasurer, Irving M. Footlik, Chicago; secretary, Wendell W. Phillips, Eli Lilly Co., Indianapolis.

THE New York Chapter of the American Materials Handling Society and the Management and Materials Handling Divisions of the American Society of Mechanical Engineers recently held a joint meeting in New York City. More than 150 in attendance heard E. H. Ashley, of General Electric Co.'s Schenectady works, talk on "How to Package and Use Material Handling Materials Economically." He illustrated his discussion with sound films and slides. H. C. Bischoff, former temporary chairman of the New York Chapter, AMHS, was elected permanent chairman for one year. Elected to the executive committee were J. J. Dumlop, F. Echevarria, W. L. Fayle, B. W. Hupp, W. E. Ivory, A. E. Lynn, F. D. McCann, T. J. McLernon.

E. R. LUTZ was elected president of the Philadelphia Material Handling Society for the 1950-51 term. He is an industrial engineer for the Atlas Powder Co., Wilmington, Delaware, and during the last war was on assignment with the War Department as material handling specialist. The current membership of the handling group is over 200, and representation covers industry in eastern Pennsylvania, southern New Jersey and Delaware.

E. R. Lutz

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STEEL-PARTS STEEL BELT CONVEYORS...

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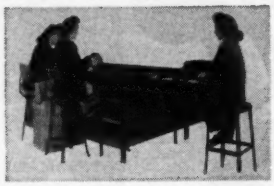

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Men wanted Jobs wanted Lines available

Rates: for "Positions Wanted" $4.00 minimum, limit 25 words. For all other classifications $4.50 minimum for 25 words, each additional word 15c; boldface type or all capitals, $7.50 minimum for 25 words, each additional word 20c; limit 50 words. Box address count as five words. All insertions are payable in advance.

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FOR SALE: One Hopper Box Bag Conveyor, consisting of seven 20′ heavy steel frame sections mounted on 6″ ball bearing casters. Spur gear and pin connection, 24″ asphalt treated belt, running over 4″ rollers at 1′ intervals. Five Horsepower motor and speed reducer. Stored in excellent shape. Ideal for moving of heavy package material in warehouses or on docks. Priced to sell. The Washington Brick Co., Muirkirk, Maryland.

FOR SALE: 1 Tipp Mfg. Co., Inc. Cableway Conveyor 102′ Long, Driven by ¼ H. P. Single Phase 60-Cycle 110-Volt Motor with Variable Speed V-Belt Drive. For details write: J. M. Austin, Folding Carrier Corp., 1104 West Main St., Oklahoma City, Okla.

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Qualified Sales Representatives wanted by established manufacturer of crane and monorail equipment in the following cities; Boston, Pittsburgh, Cincinnati, Atlanta. Industrial Monorail & Conveyor Co., 1819 Harlan St., Philadelphia 21, Pa.

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We will pay 5% commission on all leads furnished to us, which result in our purchase of used handling equipment, such as fork trucks, pallet trucks, cranes, etc. Inform us of such equipment for sale and we will pay you commissions equal to 5% of purchase price if equipment is purchased.

A. & A. MACHINERY CORP.
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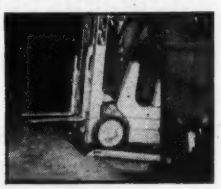
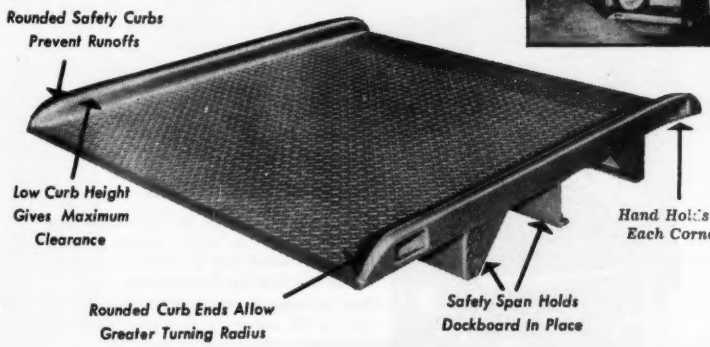
MAGCOA *Magnesium* DOCKBOARDS

...will solve your carloading problems

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★ Weigh ¼ as much as steel ramps of equal size and strength
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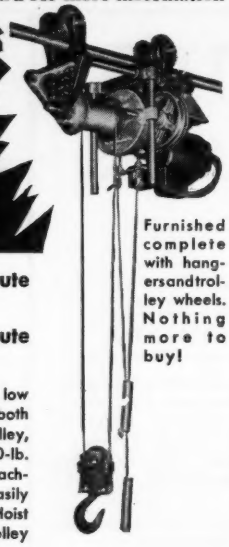

Furnished complete with hangers and trolley wheels. Nothing more to buy!

Lifts 500 lbs. at 25 ft. per minute up to 100 ft.
or 250 lbs. at 50 ft. per minute up to 200 ft.

This hoist was built to meet your need for a low cost 500-lb. hoist. Comes complete with both an adjustable single and double track trolley, ¼ H.P. single phase, reversing motor, 2000-lb. test cable, grooved drum and hook attachments. Various types of grappling hooks easily attached to bottom of cable wheel block. Hoist can be kept at fixed point or used with trolley for lifting anywhere along a track.

FREE LITERATURE
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Ask about our Men-E-Uses Power Drive speed reducing unit.

$98 Price includes trolley, motor, cable, hooks.

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EBERTS LANE, YORK, PA.

SHIPMENTS of steel products for agriculture have averaged over a million tons annually in the past decade, American Iron and Steel Institute announced. More than 80 per cent of this tonnage, in recent years, has gone into farm machinery. These figures, compiled by the Institute, exclude steel going into tractors and the steel products farmers buy from jobbers, dealers and distributors. Shipments for the agricultural industry have increased each year since the end of the war, culminating in a record 1.5 million tons of steel products in 1949, making agriculture the ninth largest steel consuming industry.

AN ATOMIC golf ball that can't get lost was demonstrated recently. Minute quantities of radioactive materials embedded under the cover of the ball makes it possible for a caddy carrying a small, portable Geiger counter to locate the "atomic" golf ball even when hidden in dense woods or deep rough. This answer to a duffer's prayer was developed at the B. F. Goodrich Research Center, Brecksville, Ohio, by Dr. William L. Davidson, director of physical research. The location of a lost ball can be telegraphed by the Geiger counter by a flashing light on the instrument or by signals which the caddy can hear through head phones.

Built Up to a Standard—Not Down To a Price!

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For Every Need

RAZORBACK Pallets are QUALITY pallets through and through. Strongly constructed of selected seasoned hardwood lumber, put together with 2½" cement-coated drive screws, and all deck boards drilled before nailing to prevent excessive splitting. Write for prices!

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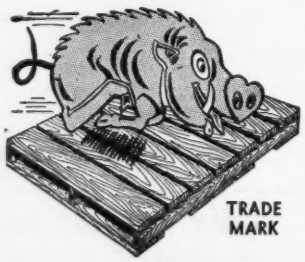

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SELECTIVE type, PUSH BUTTON CONTROL with all buttons on single flexible pendant leaves one hand free for accurate positioning of the load by the operator.

One or more similar EUCLID installations may be the answer to your production line problems.

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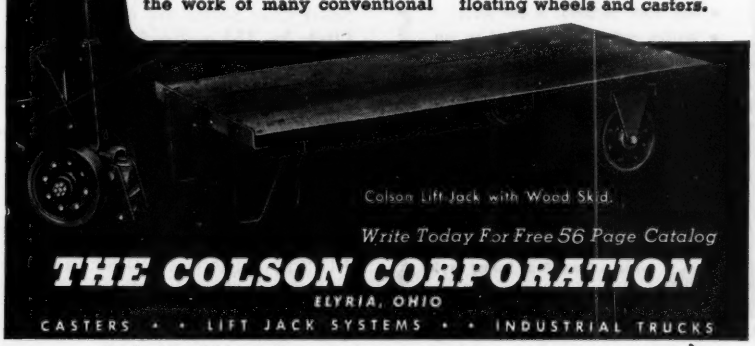

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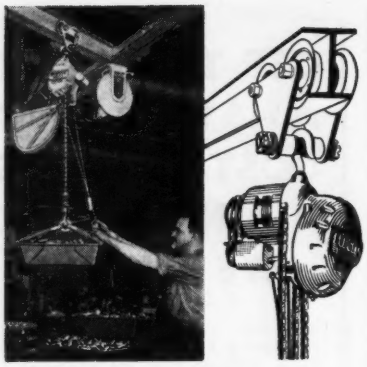

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(Check corresponding numbers on the enclosed card for the free literature listed below).

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ELWELL-PARKER ELECTRIC CO. is offering engineering data on its drum handler for use with fork trucks.
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THE SISALKRAFT CO. is offering details on its Fibreen Method of loading and a sample of the product.
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GENERAL BOX CO. will send data on its wirebound crates, nailed boxes, corrugated boxes and other types of containers.
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A-B-C PACKAGING MACHINE CORP. Details and floor plans of its Short Case Sealer are offered.
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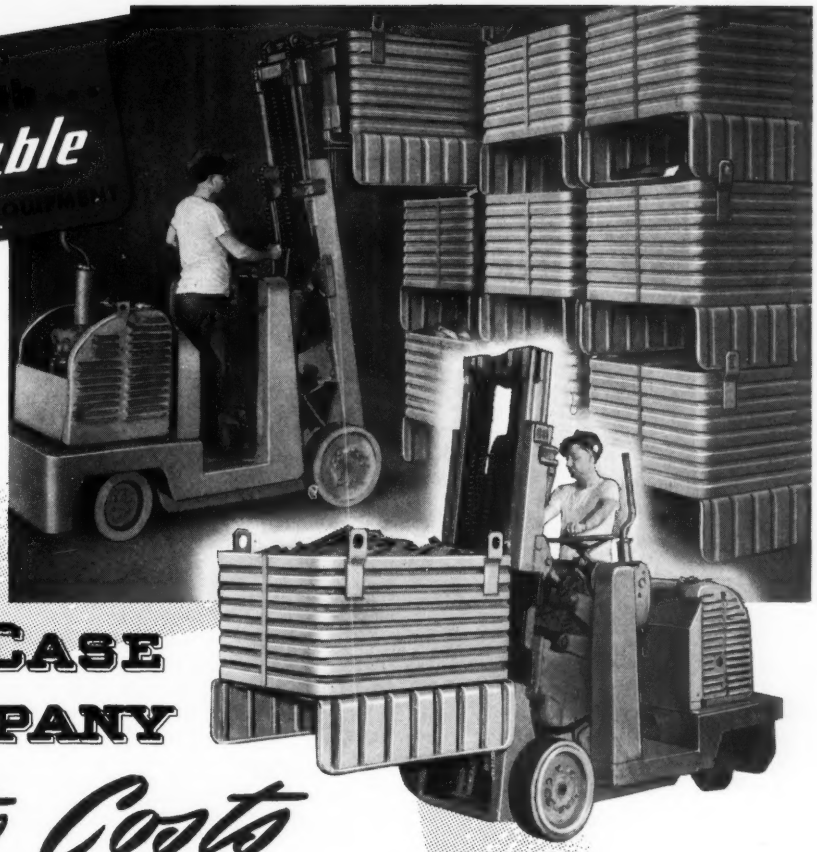
MATERIALS HANDLING EQUIPMENT



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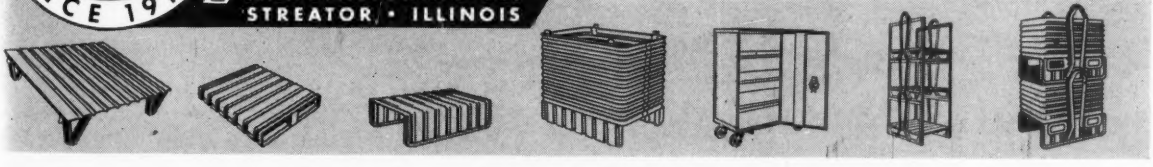

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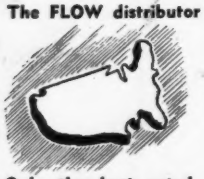

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We believe that it is virtually impossible for any one individual to determine who in industry and where in industry a magazine like FLOW should go to reach the proper buying influences. After all, advertisers and potential advertisers in FLOW are specialists, and they must reach specialists in order to sell.

Our solution to this problem is to put the circulation of FLOW in the hands of more than 350 circulation managers. These circulation managers are the salesmen for the 47 material handling equipment distributors in 64 trading areas throughout the country who subscribe to FLOW for their customers.

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